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CIO

THE MAGAZINE FOR INFORMATION EXECUTIVES

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AN INTERNATIONAL DATA GROUP PUBLICATION

The White House's J. Bonnie Newman



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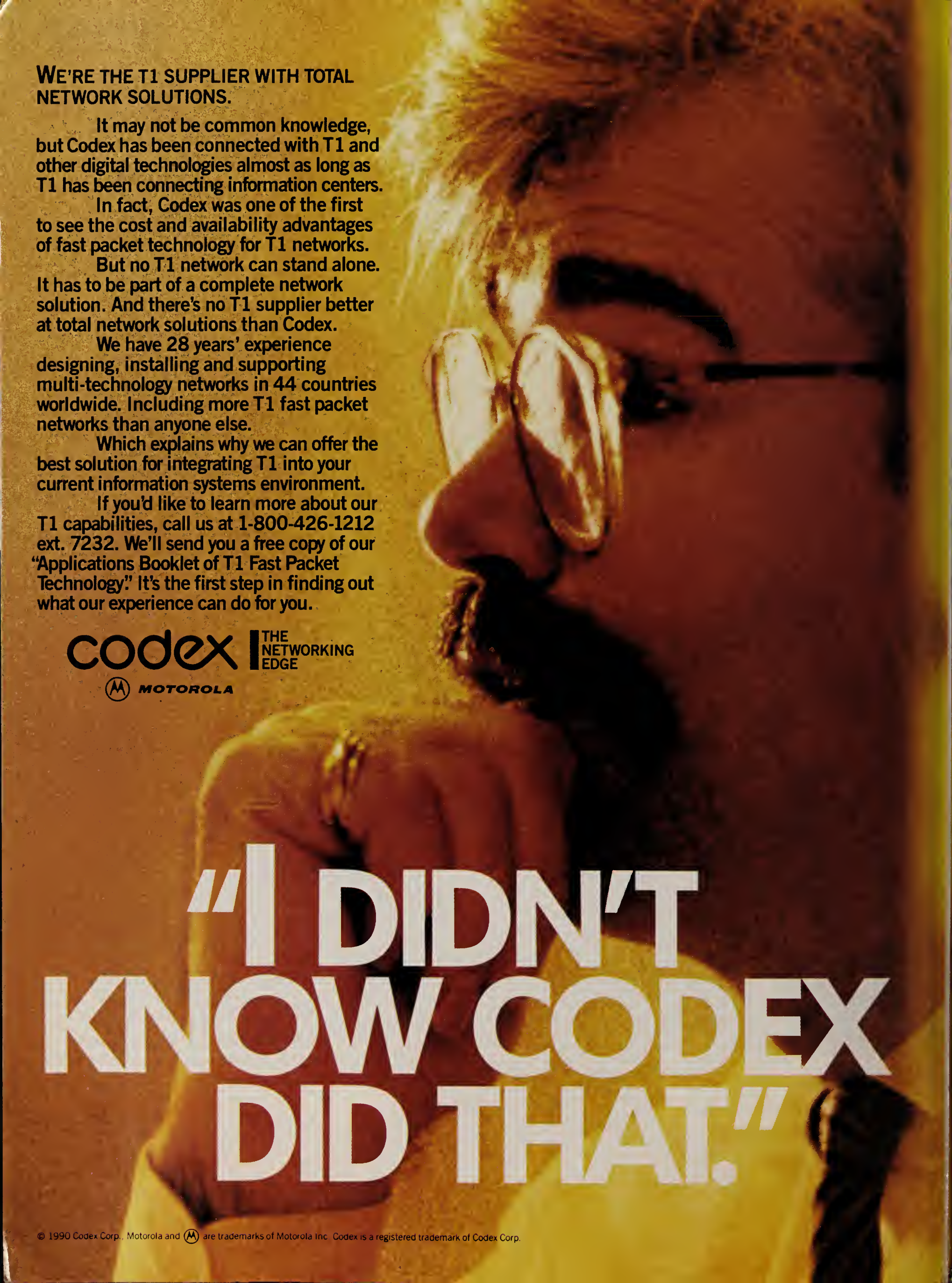
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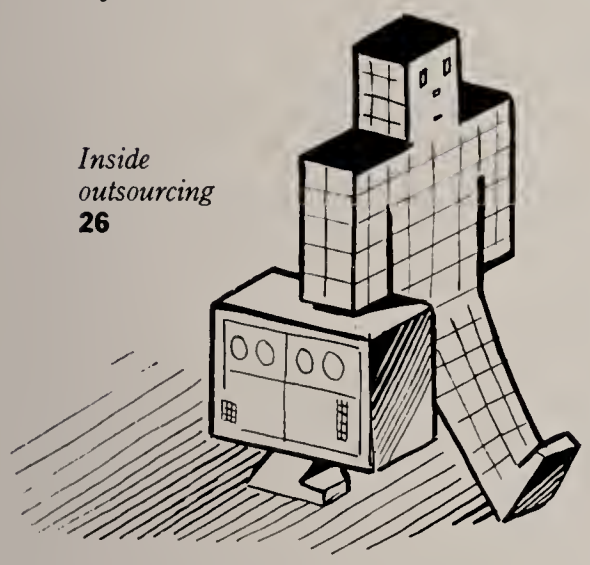
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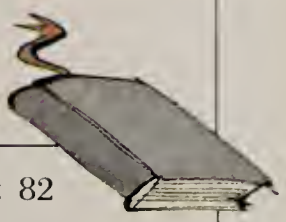
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One old chestnut in the evolution of CIO lore has been the issue of the reporting relationship between the information executive and the chief financial officer—in particular whether the CIO should report to the CFO. On the whole, the generic reasoning against that reporting schema has been that the CFO has an accountant's relatively narrow perspective, but that the CIO has to take a broader view of the strategic needs of the enterprise. In many private conversations, CIOs have said that they never would have been able to implement strategic applications had they reported to the CFO. This is because the types of applications that help companies develop new products more quickly or provide highly responsive customer service or achieve a global reach often cannot be justified in the traditional ways deemed appropriate by financial types.



To date, the CIO-CFO brouhaha has been the grist of many articles revolving around the appropriateness of the reporting relationship. But it appears the controversy is taking on a new twist. Evidence is emerging that CFOs see their roles changing from being the keepers of rows and columns to becoming the strategic advisers of CEOs. And their journey to the executive council could be hastened if they had enterprisewide control over the management of information resources.

If this is the case, then CIOs could be on the verge of a power struggle with their bosses, former bosses and line-management colleagues. At least two studies of CFOs have confirmed that they are in the process of reevaluating their roles, placing increased emphasis on strategic planning and less on operational activities. This trend is being driven by widespread corporate restructuring and the growth of global markets—the same business realities that have fueled the emergence of the CIO role.

Some experts believe that CFOs' past neglect of responsibility for understanding and harnessing information technology gave impetus to the rise of the information executive. Our story "Beyond the Beans" (beginning on Page 50) explores the possibility that CFOs may be eying a return to the domain they relinquished. At a time when CIOs have begun to capitalize on their reputations for being both business- and technology-savvy executives, some turf wars may be in the offing.

In fairness, nearly half of the CFOs surveyed by Heidrick and Struggles said that CFOs should give control of IT to a CIO. But more than one-third of the respondents felt that CFOs should retain control of IT.

Although there are many productive CFO-CIO alliances, there are some CFOs who regard control of information as a prerequisite to gaining more executive power. The battle lines may not yet be clearly drawn, but it wouldn't be a bad idea if CIOs cast a glance over their shoulders now and again. Or, as Satchel Paige used to say, "Don't look back—something might be gaining on you."

Marcia Blumenthal

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Object Lessons

While it's not yet time to scrap existing database-management systems, savvy CIOs should begin to bone up on the object-oriented DBMS

BY DAVID FREEDMAN



If CIOs felt obligated to be conversant in every trendy technological innovation that came along, they would never get out of the library. Occasionally, however, a new piece of jargon starts popping up with such regularity that even those managers who shun the leading edge begin to venture a cautious look. Object-oriented database-management systems (DBMSs) seem to be ascending to this vaguely dangerous status, and for good cause. According to some experts, object-oriented DBMSs will be the dominant DBMS technology of the coming decades.

Uh-oh. Just when your organization has gotten all cozy with relational DBMSs, is it time to trash them?

Definitely not. Should you be keeping an eye on object-oriented DBMSs? Probably. As with most trendy developments, these systems are surrounded by a certain amount of hype. However, in this case, there is a good deal of substance behind the hype.

Relational and most other types of DBMSs require that information be stored in standard formats structured as records or tables. That doesn't provide for much flexibility once the format has been established, but it enables applications programs and human queriers to know exactly how to access different types of data. Object-oriented DBMSs, on the other hand, make it possible to set up unique structures for diverse classes of information, allowing users to store and retrieve virtually any data in any form, no matter how unusual or complex.

To avoid having to provide every application program with the numerous sets of instructions needed to access disparate types of data, object-oriented DBMSs store the instructions alongside the data itself. A set of data and the instructions that accompany it are together defined as an "object." An application program doesn't have to worry about what sort of data is in an object when it accesses it; the data could comprise a number, free-form text, a voice message, an image or even a complicated combination of many other objects.

So far, object-oriented DBMSs have only been offered by start-up companies aiming at specialized applications. According to Thomas Atwood, chairman of Object Design Inc., a Burlington, Mass., vendor of such systems, "The market segments moving to object-oriented DBMSs first are those that have non-record-oriented types of data, like voice annotation, text and scanned images." Chief among these segments are computer-aided engineering and other computer-aided functions, including publishing and software engineering, Atwood continued. These applications typically employ many different types of complex data structures as well as images.

But Atwood said that the up-and-coming market for object-oriented DBMSs is a more mainstream one: office automation at large companies. "Office automation has [some of] the same . . . characteristics as engineering applications," he explained. "Instead of schematics and geometries, office automation includes text, graphics, and voice-annotated documents. That type of information can't be kept in records." In addition, he noted, object-oriented DBMSs can be as many as three times faster in dealing with complex data like graph-

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June 1990

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I hope you will enjoy reading the June issue of CIO, and every issue to come.

Sincerely,

Joseph L. Levy
President and Publisher

P.S. I would appreciate hearing your comments, suggestions and ideas for future issues.

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ics—speed that can be crucial in avoiding bottlenecks in PC networks.

Atwood predicted that such advantages will lead PC software vendors like Lotus and Microsoft to start building applications around object-oriented DBMSs. When that happens, he suggested, companies may want to start building up their own expertise in working with object-oriented systems. Those that do will be able to "build [their] own specific applications that would interact with the packaged applications," he said.

Atwood believes that once companies start to become familiar with object-oriented DBMSs, many will choose to standardize on them. "Instead of getting into the tail end of relational DBMSs, companies should consider getting into the front end of object-oriented DBMSs. This will be the next big transition in computer science."

Others aren't so sure. Tony Percy, vice president of software management strategies for The Gartner Group Inc., a market-research firm in Stamford, Conn., thinks that while object-oriented DBMSs will find a number of comfortable niches, it will be some time before they find their way into the mainstream. "Most information technology managers can safely ignore them," Percy said. "The technology is too immature, and the methodologies needed to manage and develop them haven't been established."

Percy predicted that object-oriented systems will eventually start turning up in specialized applications in engineering and manufacturing, at which point IT managers may want to learn enough about the technology to offer some guidance to users in these areas. In addition, he said, object-oriented DBMSs "will sneak in under the covers" of some third-party applications, such as software engineering. CASE vendor Index Technology Corp., of Cambridge, Mass., has already started moving to build versions of its tools around an object-oriented DBMS, he noted.

While Percy conceded that the ability of object-oriented systems to handle images and complex data would be increasingly useful to organizations, he insisted that these same functions could be handled by modifying relational DBMSs. "People will want to manage voice and image under the same applications-development tools they use for DB2 or Oracle," he said. "That's why the dominant relational DBMS vendors are extending their products in these directions." And, in fact, an official of Oracle Corp., of Belmont, Calif., said that the upcoming version of its DBMS, expected out as soon as the end of this year, will offer some object-oriented capabilities.

Object-oriented DBMSs make it possible to set up unique structures for diverse classes of information, allowing users to store and retrieve virtually any data in any form, no matter how unusual or complex.

Some organizations, however, seem ready to take the plunge into object-oriented DBMSs whether or not their relational DBMS vendors are ready to lead them. "A standard relational DBMS doesn't understand a lot of the different data types that an organization like ours has to deal with," explained Dr. Richard Stahlhut, an M.D. and a database analyst with Children's Hospital in Boston. Children's has standardized on Oracle, but Stahlhut is designing a new database for the hospital that he would like to see handle most of these data types. "An electrocardiogram can include traditional structured data, free-form text, and an image," he explained. "The medical industry has been stymied by how to best present this sort of information rapidly."

Stahlhut said he'd welcome an object-oriented DBMS if it would get the job done. "This project is a major task, and I'd look at any tools that would shorten the effort," he said. "We're heavily invested in Oracle, so it would be great if they could provide the answer. But if other alternatives came up first, including a start-up company with the right object-oriented DBMS, we'd be open-minded."

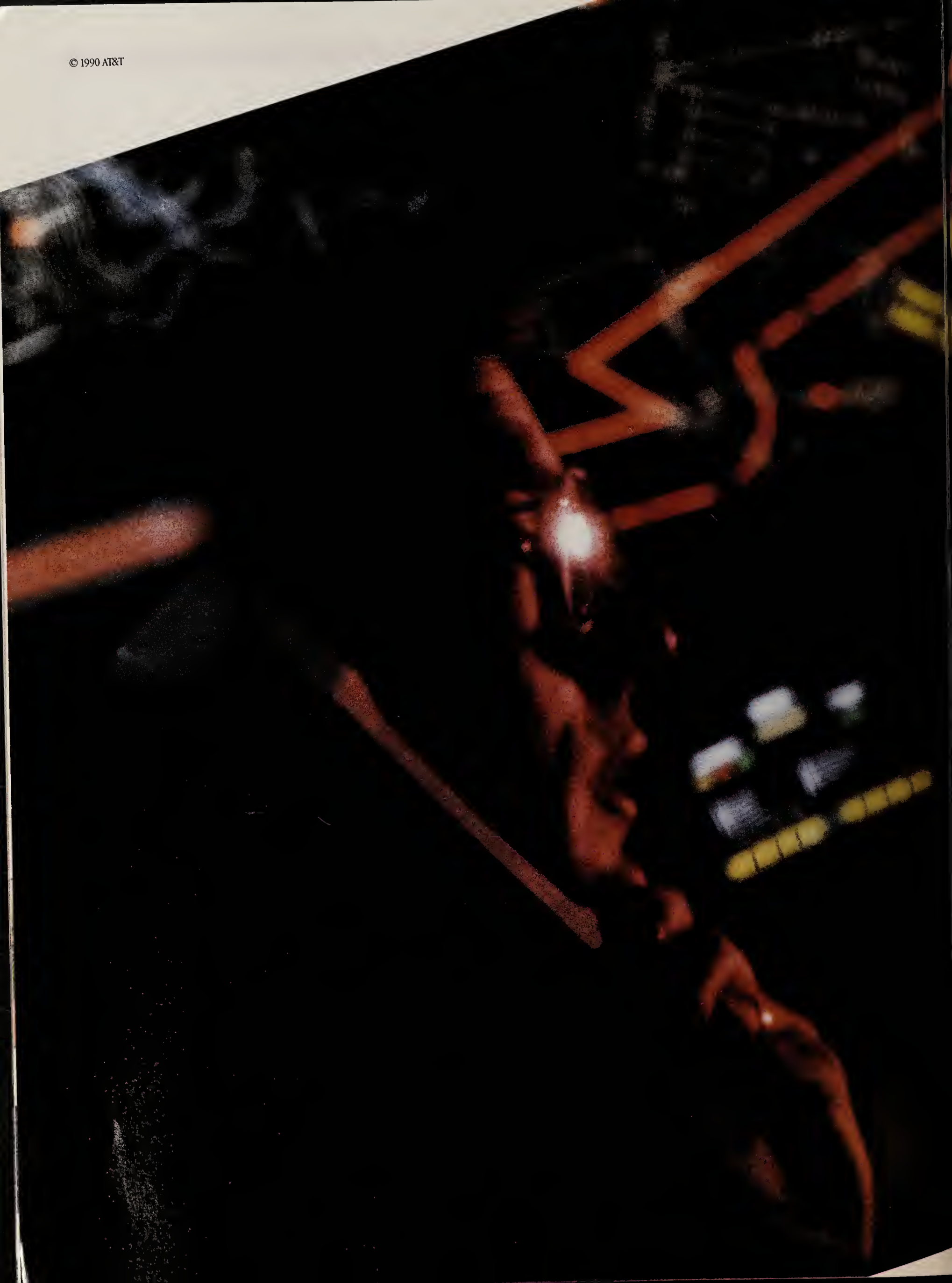
Also open-minded is Steven Levy, vice president of advanced technology with Putnam Management Co., a Boston financial firm specializing in investment management. Levy is leading the development of a software environment in which new financial applications will be able to be built in days rather than years. Because of the complex nature of financial information, Levy said that object-oriented DBMSs from Object Design will be key components of the environment. "Object-oriented DBMSs allow you to define different ways of implementing the same types of things," he explained. "For example, 'yield' is calculated one way for stocks and another way for bonds, and that's hard to deal with on a traditional DBMS." Only an object-oriented DBMS, he added, could handle the "mindboggling" variety of data associated with a simple query for information on a topic such as IBM stock.

Levy insisted that the advantages of this object-oriented environment could apply to any type of organization. "We're avoiding tying the environment to particular applications," he said. "You could easily remove the financial side and replace it with a manufacturing or any other type of module. It's a very useful technology, and more companies should be looking at it."

If the Putnam project and others like it succeed, it's a good bet that the topic of object-oriented DBMSs will graduate from the realm of trendy jargon to become required reading. CIO

David Freedman is a freelance writer based in Brookline, Mass.

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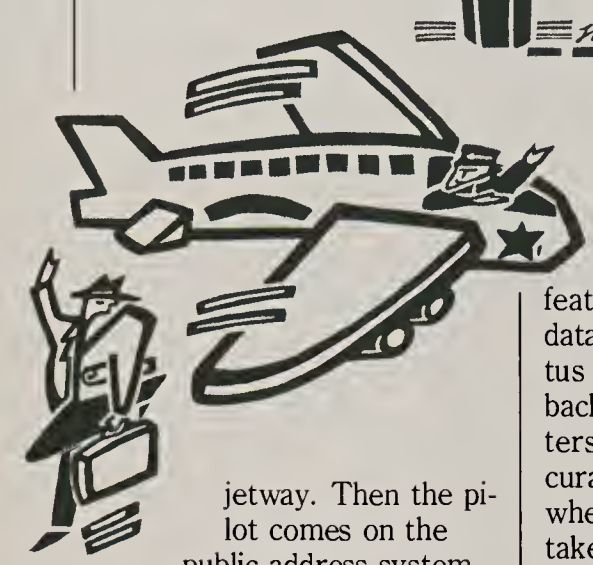
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jetway. Then the pilot comes on the public-address system and reads a long list of flights and their gate assignments. Your first thought is, "Thanks, I needed that." Your second is, "How did they know that?"

The answer to the question is ACARS, or aircraft communications addressing and reporting system: a radio, computer and communications network for exchanging data between individual commercial aircraft and their on-the-ground managers. The system today uses the latest in information-processing and packet-switching technology, but its roots reach back to the days when the Ford Trimotor was the air transport of choice for frequent flyers.

ACARS is a service of Aeronautical Radio Inc. (ARInc), the company formed by the major air carriers more than 60 years ago to operate a single radio system for all communication between aircraft and ground controllers. Today, in addition to ACARS, ARInc operates a conventional voice radio system and one of the largest packet-switching networks in the world—a network whose channels not only transport data between ACARS and the operations centers, but among all of the major airline customer reservations systems as well.

While connecting flight information may be ACARS' most visible feature, the up-to-the-minute data on aircraft and crew status that ACARS transmits back to airline operations centers is its most important. Accurate and timely reports on when each plane lands or takes off; what kind of fuel, cargo and passenger load it is carrying; and who is operating the craft enable the airlines to comply with regulations and adapt their operations immediately as conditions change during the day.

FEEDBACK

A recent study of U.S. competitiveness reveals that relatively few manufacturing companies are taking steps today that will improve their long-range competitive position.

The study, conducted by the consulting firm Ernst & Young, focused on 277 manufacturers based mainly in the Great Lakes states. The great majority (72 percent) were judged likely neither to improve nor to worsen their present position; 17 percent were deemed likely to suffer a competitive decline. Only 11 percent were seen as well-positioned to gain ground.

The study cited a number of success factors that characterized the companies likely to thrive:

- **a decentralized structure that emphasizes close customer relationships and the development of a viable corporate culture;**
- **executive compensation related to performance;**
- **a top-down emphasis on quality over cost containment;**
- **an emphasis on investing in human rather than technological resources, with technology investment driven largely by customer needs;**
- **broadly rather than narrowly focused planning processes;**
- **development of innovative performance-measurement systems, spurred by a recognition of the need to scrap traditional measures;**
- **broad and innovatively upgraded product lines;**
- **extensive vertical integration, plus presence in international markets.**

According to Terrence Ozan, E&Y's national director of manufacturing industry services and an author of the study, improving one's position requires a broad-based program. "Successful companies will make a commitment to continuous total improvement," said Ozan, "not merely independent, intermittent improvement or cost-reduction programs."

The full study is available from Ernst & Young's Manufacturing/High Technology Industry Services Group, 2,000 National City Center, Cleveland, Ohio 44114.

COMMUNICATIONS

NETWORK, HEAL THYSELF

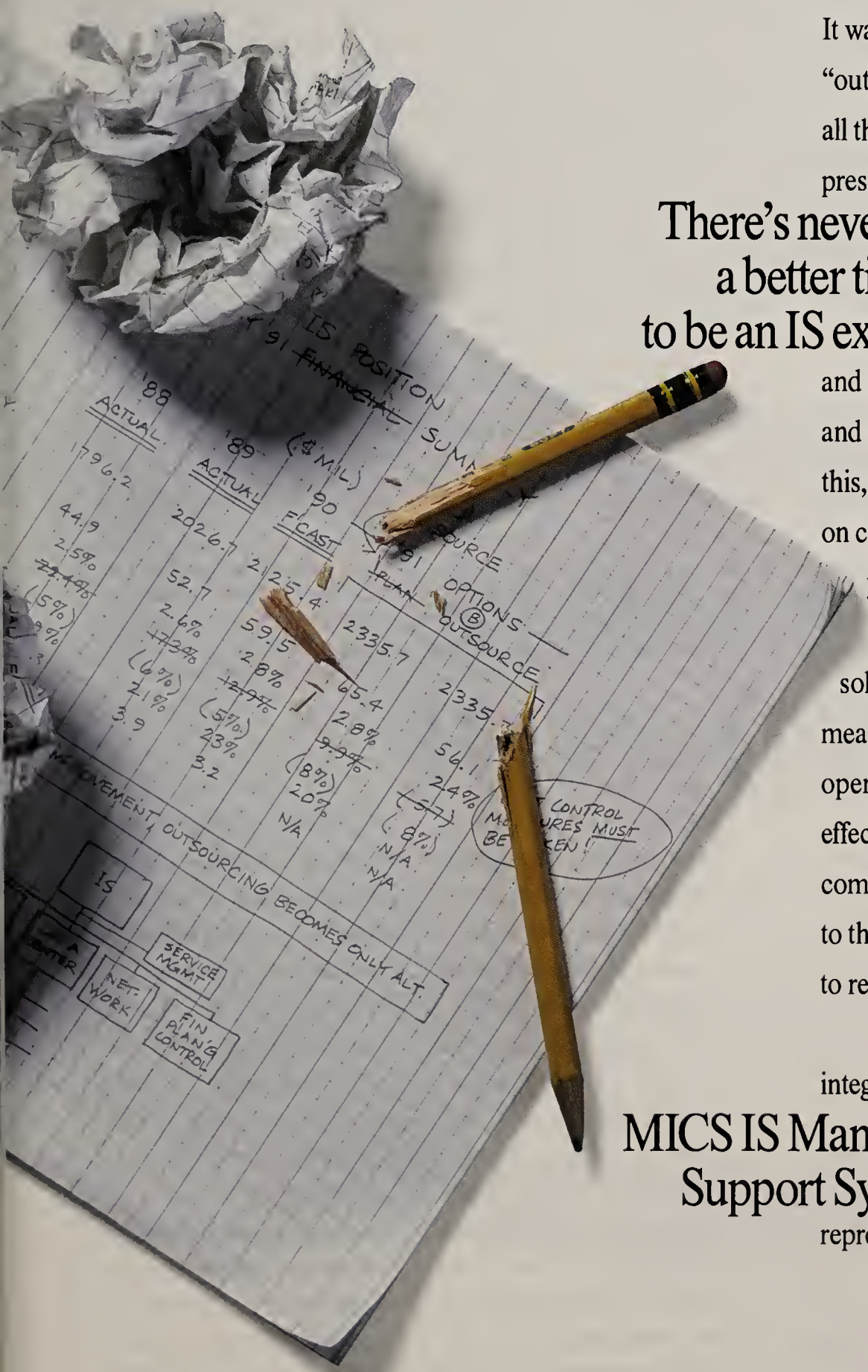
US WEST Communications last month introduced what it calls a "self-healing" network service. Initially, the Denver-based RBOC will offer the service to its largest customers in five cities: Minneapolis, Denver, Phoenix, Seattle and Portland, Oregon. It is also providing a dedicated custom offering to AT&T and IBM, who will incorporate it into network services offered to their customers.

The fiber-optic-based system is configured as a concentric ring with an alternate "protect path," according to Bob Hawk, president of US WEST's Carrier and Information Provider Division. The self-healing aspect is accomplished by connecting participating customers through two telephone-company switching offices via fiber-optic cable. If the routing through one of the offices experiences trouble, the second routing goes up instantaneously. While the technology is not new, the offering represents an ambitious implementation of the technique, according to a company spokeswoman. In an outage, the network reroutes voice, data and video traffic within 50 to 240 milliseconds.

US WEST has enough confidence in the service to guarantee "zero defects." In the case of an unhealed outage, customers get the services purchased on the self-healing ring at no charge for that month, Hawk said.

ILLUSTRATION BY JONI LEVY LIBERMAN

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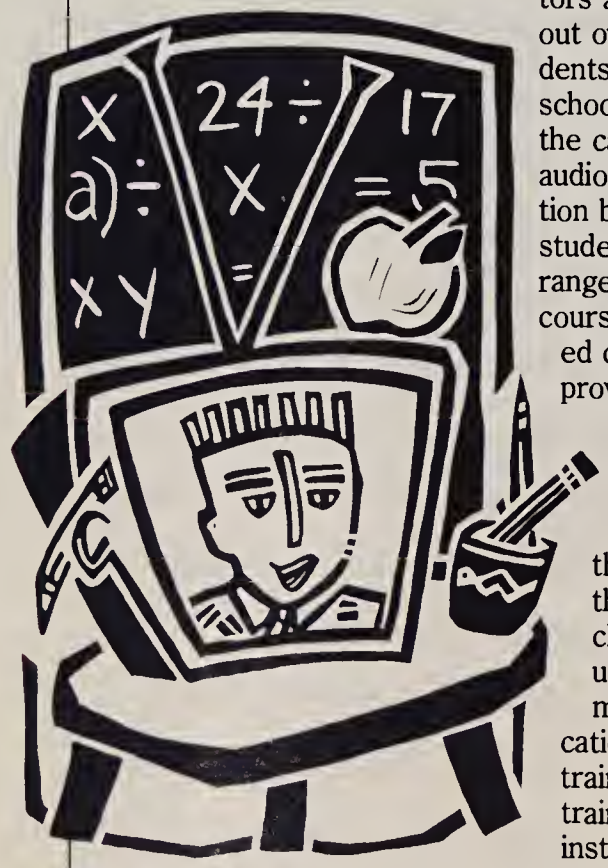
TRENDLINES

EDUCATION

FIBER IN THE CLASSROOM

The one-room schoolhouse is undergoing a transformation in the Magnolia State. Mississippi has found that students in its remote, small and disadvantaged schools are having trouble keeping up with the rest of the class nationwide. (The state recently placed 49th in the country for the number of students taking advanced placement classes in preparation for college.)

Consequently, state officials are looking for ways to offer students better educational opportunities. In April, Mississippi announced an agreement with South Central Bell of Birmingham, Ala., and Northern Telecom Inc. of Nashville, Tenn., for a trial fiber-optic, interactive learning network that will supplement local classes by bringing televised teaching to schools throughout the state.



The trial will allow instructors at universities to reach out over the network to students in rural Mississippi schools. The system will offer the capability for interactive audio and visual communication between teachers and students and offer a broader range of more challenging courses to schools with limited curricula. The state will provide each of the schools with an electronic classroom equipped with transmitting and receiving equipment. If the project is a success, the network of equipped classrooms could also be used in the future for remedial adult literacy education, in-service teacher training, specialized industry training and computer-based instruction, according to South Central Bell.

The Mississippi education trial will be the first of its kind in the country to use a public switched telephone network. Officials from South Central Bell estimate that the local Bell operating company needs to invest almost a billion dollars in Mississippi over the next five years to keep the state's telecommunications infrastructure abreast with developing technology.

The project will be phased in over the next year, with some applications running as early as this fall. The purchase of classroom equipment, installation of the cable, coordination of the curriculum and teacher training are being timed for broadcasts slated to begin next January.

Schools in five cities will join in the trial, based on curriculum needs, administrative commitment and proximity to existing fiber routes and switching facilities. ■

FRITO-LAY TAKES TO THE SKIES

Snack-food giant Frito-Lay Inc. has announced that it will convert its data communications network from land lines to an extensive very small aperture terminal (VSAT) satellite system. Scientific-Atlanta Inc. of Atlanta will install and maintain the network, which will link 300 locations around the country to Frito-Lay headquarters in Dallas.

The decision to convert to VSAT comes after a year-long study on communications alternatives. "We chose VSAT over terrestrial services because of cost, superior multi-protocol interconnectivity, and the exciting possibilities for private business television and database broadcast," said Dan Smith, communications strategy consultant for MIS at Frito-Lay. "VSAT technology has consistently demonstrated its potential to provide the highest-quality, best-cost network."

Scientific-Atlanta's SkylinX.25 architecture supports four link protocols at each remote location and is capable of LAN-to-LAN interconnections. It restores individual site failures by automatically re-connecting failed locations to the hub packet switch. The company is also providing a back-up hub that will restore the entire network in the event of a disaster.

A 7-meter master earth station located in Dallas will form the hub of the network, which will comprise 300 1.8-meter VSAT terminals around the country. Scientific-Atlanta will provide Frito-Lay with turnkey network installation and satellite transponder services for five years. It will also provide on-site personnel and 24-hour network management. ■

HIRING VIDEO

IBM Corp., the National Easter Seal Society and the President's Committee on Employment of People with Disabilities have produced a 17-minute videotape on fostering successful work relationships between people with disabilities and their employers. Through interviews with employers and employees, the tape portrays the process that occurs in the workplace when a person with a disability is hired.

According to a Lou Harris and Associates survey, two out of every three people with disabilities are unemployed; of this group, two out of three would like to work. The cost of modifying workplaces to accommodate employees with disabilities is relatively low—under $500 in 70 percent of all cases. The increased competition for qualified workers means that companies must find ways to grow the applicant pool. People with disabilities are therefore a rich resource for employers to draw upon. The videotape, called "Part of the Team," aims to assist the process of hiring and accommodating people with disabilities. The tape can be obtained by calling the National Easter Seal Society at 312 726-6200. ■

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TRENDLINES

IT'S UNDER HERE SOMEWHERE . . .

Jeffrey J. Mayer is an acknowledged expert at transforming human clutter into human order. Some months ago he sent us the manuscript of his recently published self-help tome, *If You Haven't Got the Time to Do It Right, When Will You Find the Time to Do It Over?* (Simon & Schuster, $17.95). As a Chicago-based consultant, Mayer specializes in turning desktops of hellish chaos into desktops of pristine organization. He also sent us clippings testifying to the deep gratitude of executives whose offices, and hence lives, he had made over in the image of a well-adjusted neatnik. The irony of his submissions to us is that they found their way onto one of the two most cluttered work surfaces in the organization and became trapped beneath many pounds of accreted debris.

Like any energetic self-promoter, Mayer telephoned to see what we thought of his work and to ask whether we might review it. We laughed nervously and confessed (as one might confess an Oedipus complex to Freud) that the manuscript would probably need to be dynamited free and that he should call back in a couple of weeks.



He has called three more times and on each occasion has suffered, with considerable good humor and patience, the news that the manuscript has risen to the turbulent surface like a breaching whale, has been briefly observed, attended to and admired, and has once again disappeared into the briny deep. With the evident sincerity of one who believes in the efficacy of his expertise, Mayer did once say, "You know, you sound like someone who really could *benefit* from this book."

We finally harpooned it the other day and read it. It's good—written with wit and appropriate economy and filled with highly detailed, step-by-step strategies for achieving an orderly workspace. (And if order seeps inward from its outward manifestations, who knows, perhaps an orderly mind is also attainable.) Why, if certain people were actually to follow Jeff Mayer's advice, their work lives might change in important ways.

But, of course, the book is threatening too. Old habits die hard, and we like to tell ourselves that a good five square yards of paperoid clutter—the righteous oat bran of free enterprise—is a sign of being gainfully, indispensably "at work." But Mayer cruelly lays this canard to rest, correctly observing that clutter is merely a symptom of decision-making deferred. Or, worse, of decisions made but not yet acted upon.

Damn! We have read the book, Jeff. Now, apparently, we have to do something about it. Thanks a million. . . .

JOINT VENTURES

MINING FOR KNOWLEDGE

To the growing list of intangible, information-based corporate assets, add the aggregate expertise of employees—the so-called knowledge assets. Now a number of IT vendors and users have banded together to address the need to create systems that can effectively "capture, maintain and exploit" those assets—which, despite progress in expert-systems design, remain relatively elusive and hard to get at.

Operating under the banner IMKA—Initiative for Managing Knowledge Assets—the group has promised to unveil software standards late this summer that will assure that expert-system applications can run in "heterogeneous" environments. That would allow organizations to more quickly and easily convert the techniques their key employees use to solve business-related problems into expert-systems software.

Ultimately, the proposed standards would open up new doors for artificial intelligence technology, expanding the power of expert systems by increasing the number of rules they can employ—from a ceiling of roughly 2,000 today to a whopping 50,000 or more, according to Les Hellenack, director of the new software technologies unit at International Data Corp. in Framingham, Mass. Hellenack added that even with the quantum leaps of power being envisaged by IMKA, expert-systems technology will still be an aid for workers, not a replacement. "A real expert alone will still do better than a novice supported by the system," he said.

But as vendors drive to make better and better simulations of specific individuals' expertise, end users could face a whole new series of troubling questions, according to Dr. Donald Agostino, director of the manufacturing automation planning service at the Yankee Group in Boston. "The area of who owns the knowledge asset hasn't been addressed as such," he said. "It's been kind of glossed over."

IMKA was founded by firms that have already made substantial commitments to artificial intelligence and expert-systems technology: Digital Equipment Corp., the Carnegie Group and Texas Instruments Inc. among the vendors, and the Ford Motor Co. and US WEST Inc. among the users. The companies have contributed a total of $10 million to the effort, which was begun in early 1989 but not announced until last month, after the ground rules had been hammered out.

CLARIFICATION

In the April issue of *CIO*, the chart on Page 48 ("Selected Vendors of CASE Tools") indicated that Andersen Consulting sold its CASE tools only in conjunction with its consulting services. The company advises that it sells its Foundation family of products through a sales force distinct from its consulting practice. At a press conference in New York last month announcing an expansion of its Foundation products, the company stressed the independence of the sales force marketing these products.

ILLUSTRATION BY CYNDY PATRICK

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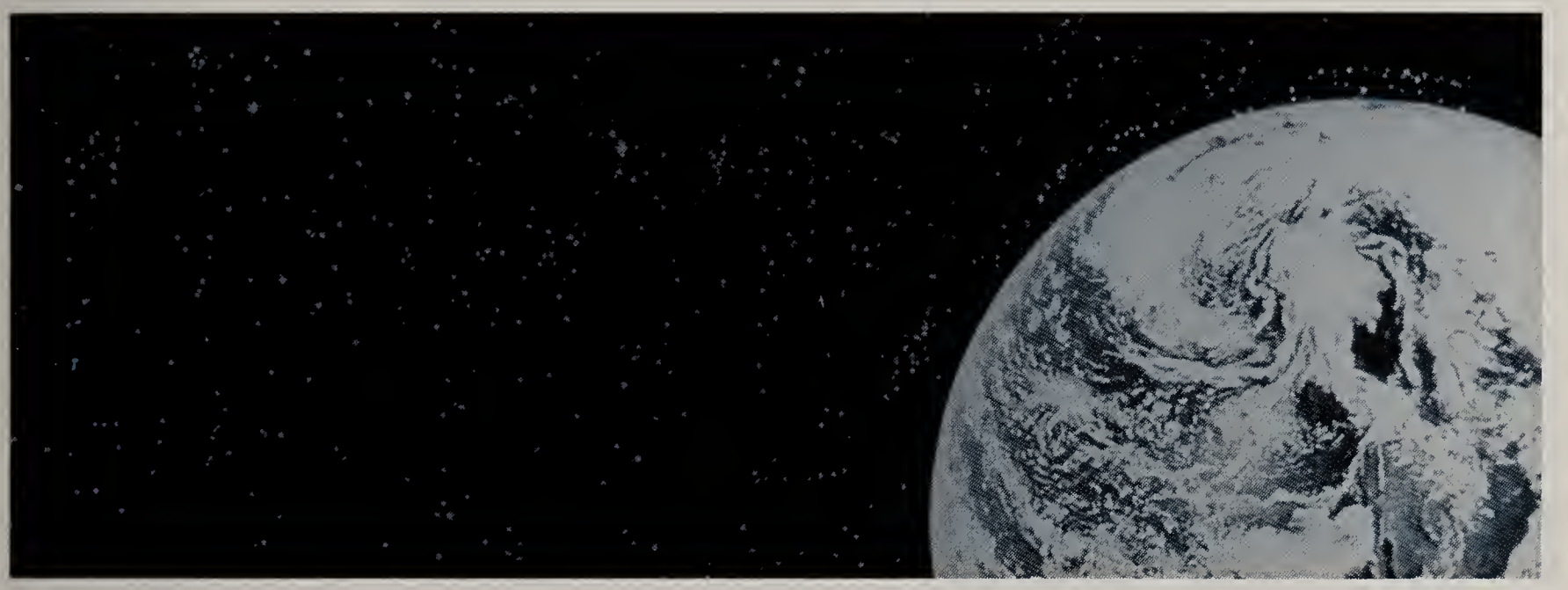
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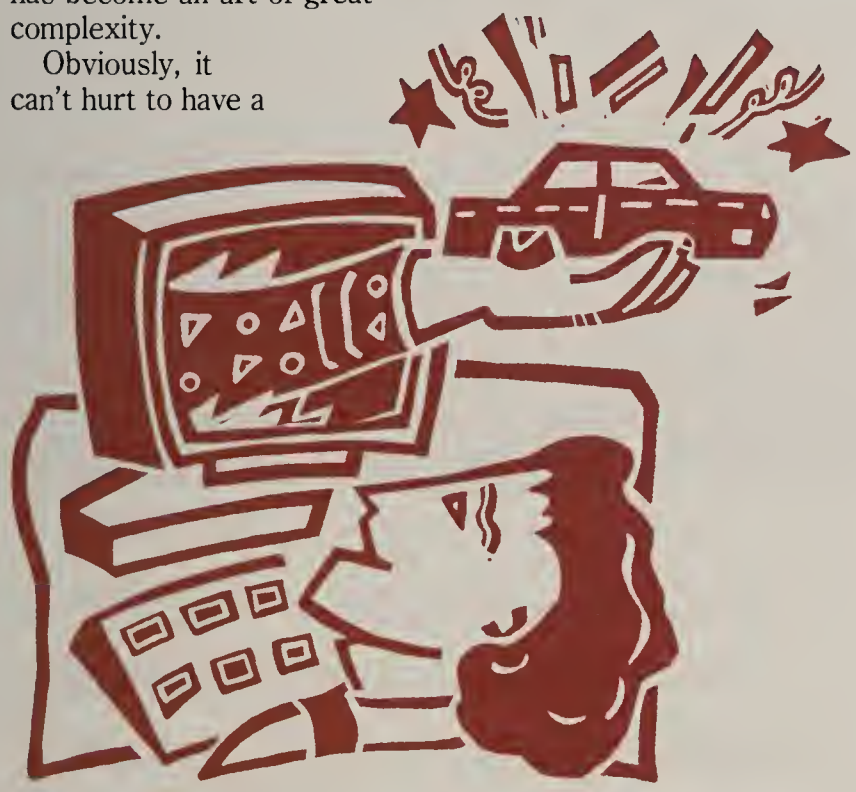
TRENDLINES

MARKETING

A New Spin on the Old Soft Sell

Every marketeer is fighting for a fresh slice of the overwhelmed and repeatedly subdivided human attention span. Standing out amid the clutter of advertising messages isn't easy. Finding new ways to get anyone to pay attention to a sales pitch has become an art of great complexity.

Obviously, it can't hurt to have a relatively pristine medium to play with. And that's what a Sausalito, Calif., company is exploiting in the potentially rich market of PC users. The SoftAd Group is creating interactive software presentations pitching a variety of products and services for clients as diverse as Ford Motor Co., Apple Computer Inc., Citibank and Ciba-Geigy Corp.



The software presentations combine chic graphics, sound effects, spreadsheets, competitive comparisons and prompts for user input along with a serving of entertainment. Software can be designed to take as much time as needed; the entertainment component helps keep viewers tuned to the message.

In fact, one clear SoftAd selling point is the ability to deliver a naturally engaged audience. Because the viewer is also a 'user,' SoftAd touts its software packages as an inherently high-quality way to present complicated information. It's apparently no accident that the client roster boasts a disproportionate number of companies whose offerings either carry very big tickets or are technically complex—exactly the sorts of items that tend to trigger a lot of pre-purchase research.

Consider the hard-sell, cutthroat auto industry. Car dealers have long known that most people would rather go to the dentist than visit a showroom. Thus, finding a way to either stimulate dealer traffic or, at a minimum, get out basic information to prospects who otherwise can't be bothered is a real coup. Some upscale consumers are even willing to pay for the pitch. Ford charges $6.95 for a combination video driving game and informational software package that gives detailed specs on 100 of its 1990 cars and trucks. One unnamed SoftAd automotive client earned a whopping 22 percent response rate to a direct-mailed software campaign that resulted in doubled showroom traffic.

SoftAd's promotional materials claim that users spend an average of between 20 and 30 minutes with an advertiser's disk and that the disks are saved rather than tossed out. SoftAd also claims that the interactive nature of the programs enables prospects to retain at least 60 percent of the information presented, versus 20 to 30 percent for conventional media. ■

Touchless Typing

A company in Newton, Mass., has introduced a typewriter that takes dictation using speech-recognition technology. Although its maker, Dragon Systems Inc., calls the device a typewriter, it actually consists of software and a speech-recognition board installed in a '386-based PC. The user speaks into a microphone and can draw upon a customizable 30,000-word vocabulary to create text at a rate of approximately 35 words a minute.

Dragon Systems envisions a market made up of typing-aversive executives, doctors and lawyers, as well as people with a range of physical disabilities. The system sells for around $9,000. ■

On the Record

In pursuing his technology dream, Eugene D. Brooks III could well become (if he isn't already) the nightmare of Seymour Cray and other supercomputer luminaries.

According to a recent article in *The New York Times,* Brooks, a government computer scientist at the Lawrence Livermore National Laboratories in California, is working to create parallel-processing PCs capable of vastly outperforming traditional comparably priced, or more costly, supercomputers. (Supercomputers rely on specialized, custom-built chips, whereas Brooks's so-called "killer micros" use inexpensive commodity microprocessors running in parallel.)

The aim of Brooks's current project is to rewrite software intended for conventional supercomputers so that it can run on machines comprising parallel processors. According to the *Times* article, by high-tech writer John Markoff, Brooks regards the hardware challenge as relatively straightforward but believes that software breakthroughs will be the key to surpassing supercomputer performance.

Wrote Markoff: "If [Brooks] is right, and some computer designers think he is not, the world's leading designers of supercomputers . . . are all in deep trouble." Brooks is quoted predicting that parallel-processing machines could become a practical competitive option "a couple of years from now." ■

ILLUSTRATION BY JONI LEVY LIBERMAN

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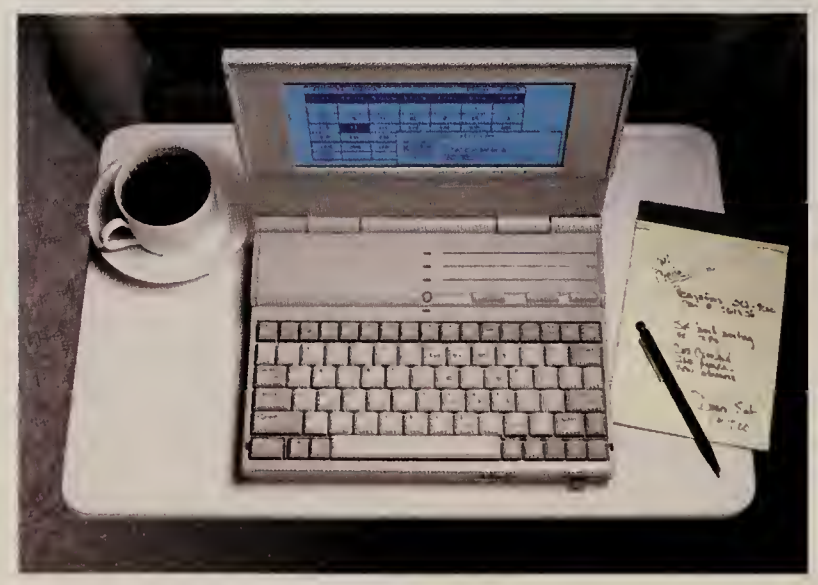


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Holding the Bag

When the system crashes, the price your company pays could include a trip to the courthouse

BY MICHAEL W. MATTOX

The typical question that is asked when system downtime occurs or critical business data is lost is "who is responsible?" However, that question may soon change from "who is responsible" to "who is legally liable."

It's common knowledge that IS directors can lose their jobs over such incidents. But it may not be commonly understood that the highest levels of management can be held legally liable for their failure to implement appropriate risk-management procedures. Now there are clear indications that not only can organizations be held liable in cases of system failure, but their directors and officers may soon be held personally liable as well.

There are a growing number of state and federal statutory and regulatory requirements that specifically deal with computer disaster recovery, especially in highly regulated industries like banking, securities and utilities. These regulations are not designed to directly address the issue of liability, but they do have a serious impact on the way business is conducted. Beyond their exact language, these requirements may be used by the courts as a legal gauge to determine what a reasonable, prudent individual would do in a similar circumstance.

There has been a recognition recently in many federal agencies that there should be some kind of legally mandated disaster recovery program that would include the backup of critical data. Guidelines issued by federal agencies explicitly recognize the need for disaster recovery as an extension of a firm's internal control and security. When a court seeks to establish liability, it may look to federal guidelines to determine what a reasonable individual would have done in a similar circumstance.

The reasonableness standard permeating all legal analysis typically involves a cost-benefit analysis. A case from the Second Circuit Court demonstrates this analysis. The judge suggested the following formula to determine the parameters for reasonable conduct: the probability of loss, multiplied by the magnitude of the harm, balanced against the cost of prevention.

Courts will focus on the cost of preventing data loss in determining whether the steps taken (or not taken) were reasonable under the circumstances. As technologies supporting data security and protection develop and become more reliable and affordable, that formula is obviously going to change. Similarly, prudent businesspeople must focus on the cost of prevention and develop the appropriate balance against the other factors outlined in the judge's formula to determine what kind of data protection procedures to implement.

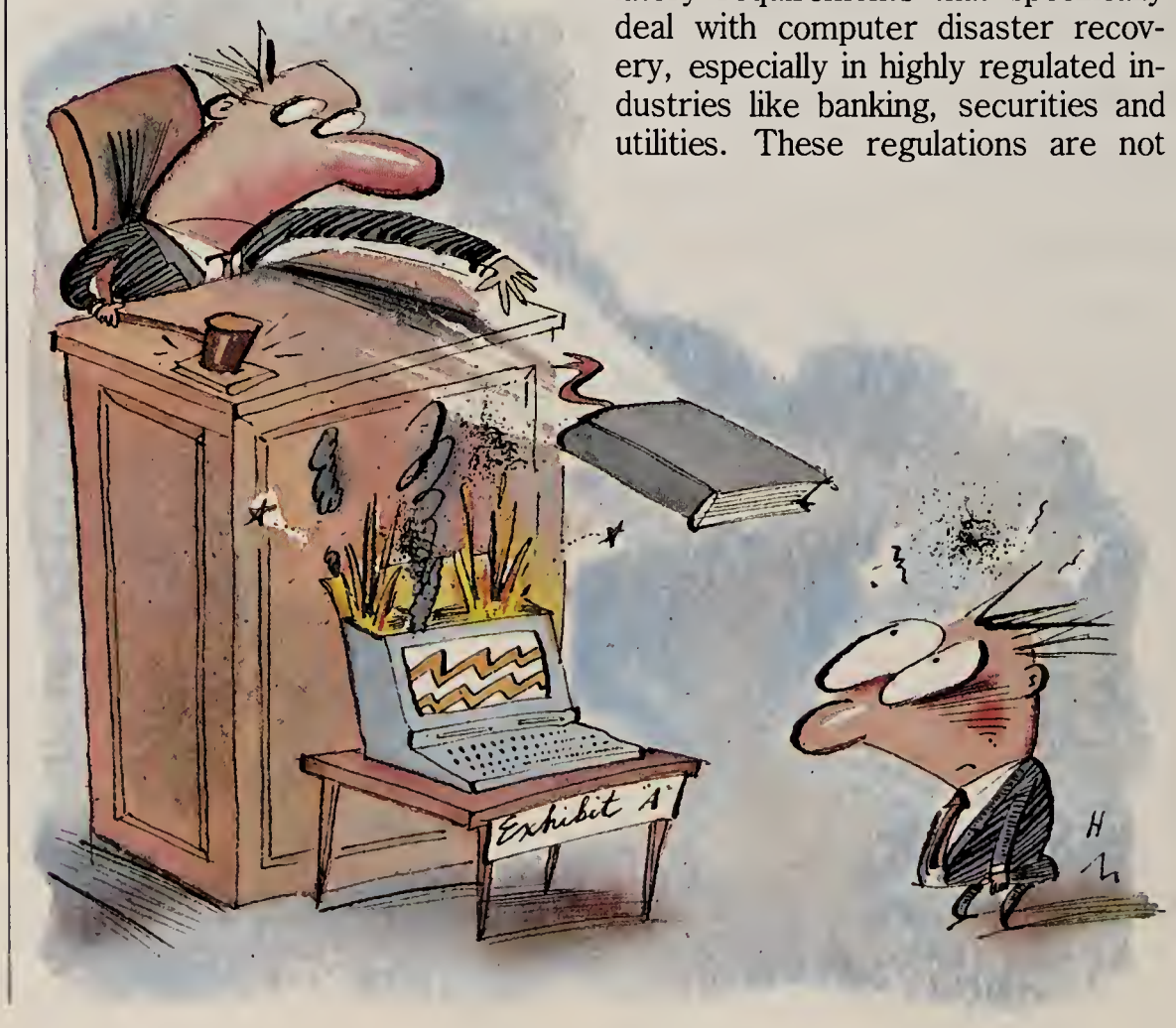


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An example of regulations that the courts may look to for guidance are those promulgated by the Securities and Exchange Commission. To protect investors and the free flow of trade in the marketplace, public corporations are required to maintain adequate transaction records as a safeguard to their investors. Investment companies and brokers are also required by federal law to maintain accurate records of each transaction. Furthermore, regulations state that if such a firm chooses to store information in computer media, it must maintain separate backup. There is simply no choice in the matter. The courts may look to these regulations to define reasonableness for the officer or director, and to determine what he or she, acting prudently, should have done.

Banks and other financial institutions are subject to state law controlling, for example, the time limit required to return dishonored checks. This has major implications for banks and financial institutions in terms of backup and data recovery.

In the past, the fall-back position for banks failing to meet the deadline has been the "act of God" defense. However, the courts are not likely to find that a failure to implement some type of backup or recovery system was an act of God.

There are several regulations that apply specifically to financial institutions. For instance, federal securities guidelines require that records of a transaction must be available within 24 hours except under unusual circumstances. Will a hard-disk failure be considered an unusual circumstance? Is it an unusual circumstance in the face of easily foreseeable and preventable risks? Is it an unusual circumstance to have some type of computer problem, or some kind of potential loss of data? Unusual circumstance may not be an acceptable defense in such a case.

The banking industry was one of the first to adopt data processing and electronics to meet not only their own internal needs but their customers' needs as well. Section Four of the Uniform Commercial Code, which has been adopted in 49 states, includes code sections that apply to financial institutions, particularly banks. As previously mentioned, state law limits the amount of time that a bank has to return a dishonored check. Failure to return a dishonored check within the prescribed limit leaves the bank liable for the amount of the check. So what is the impact to the bank in terms of liability? Banks may be required by law to take reasonable measures to safeguard data and exercise such diligence as the circumstances require in light of their fiduciary responsibility to their customers.

Officers and directors, especially in public corporations, must face this question or risk liability for failure to implement disaster recovery programs that include data backup for information.

Case law already exists that serves as a road sign to where the liability issue is headed in financial institutions. At least three courts have found banks liable in cases of computer failure. One of those decisions actually involved computer failure that resulted from a flood, but the bank was still found liable for their failure to take reasonably prudent precautions in the face of a known risk—a flood.

The health-care industry has also begun to feel the effects of increased legal responsibility for their handling of risk management in information systems. In one case, a court in Illinois found a hospital liable for negligence because it had lost or destroyed medical records, making it impossible for a patient to prove malpractice. The court ruled that the hospital had not implemented adequate backup procedures and record-retention programs.

Will the definition of reasonable care include backup of electronic files? Officers and directors, especially in public corporations, must face this question or risk liability for failure to implement disaster recovery programs that include data backup for information.

So what, then, is the impact on data protection and backup? How will a court handle a claim of negligence when a system fails and damage occurs, and, as a plaintiff's attorney goes digging into the file, a discovery is made that the integrator did not even recommend or specify any kind of data recovery or backup? A court may find the consultant or reseller liable who fails to include any provision for data protection equipment in the specifications of a key system, especially if it is clear that the system is going to contain critical information.

Even if you are able to avoid the ultimate judgment of liability, defense costs today are escalating at an unprecedented rate. You may not have the financial resources to survive the defense and prove that you weren't the liable party. So while you're thinking about selling the concept of preventive data-protection up the line, don't overlook the important responsibility that you have in avoiding litigation altogether. It all comes down to the question of responsibility, and increasingly, responsibility is going to be translated into liability. CIO

Michael W. Mattox is an attorney who specializes in computer law for the firm of Morris, Manning & Martin in Atlanta.

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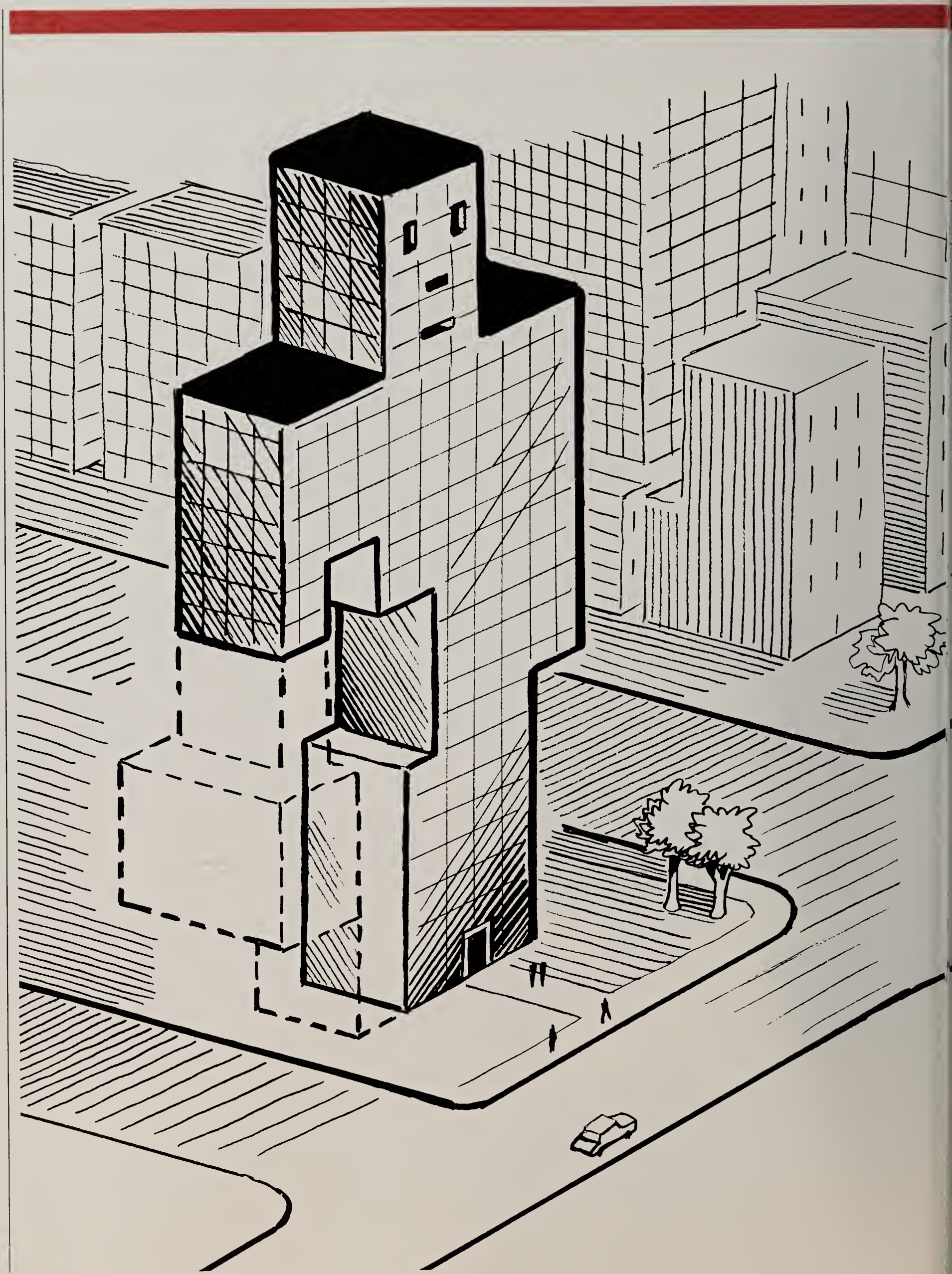
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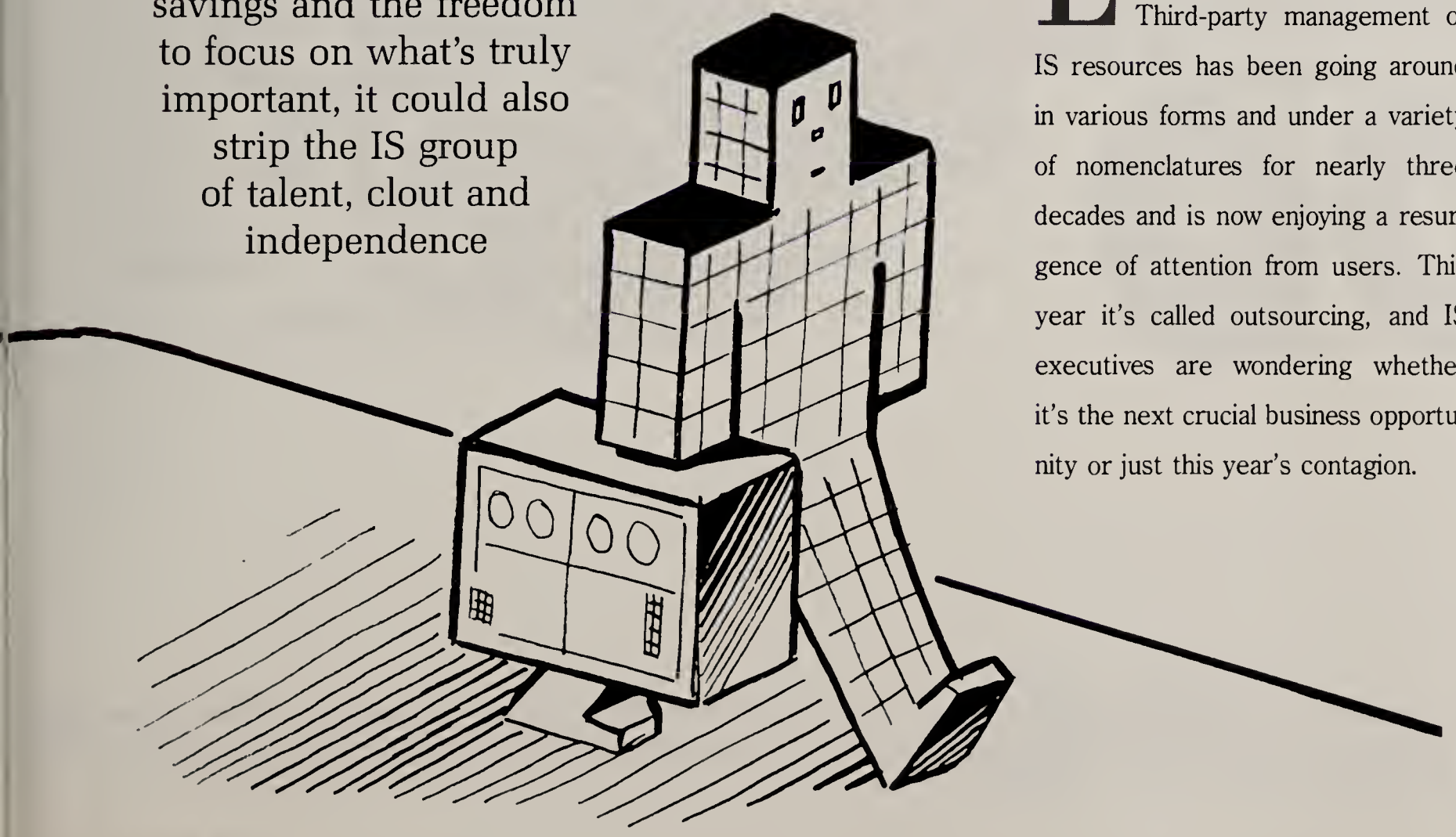
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THE MAINFRAME DOESN'T WORK HERE ANYMORE

BY MEGHAN O'LEARY

While outsourcing promises bottom-line savings and the freedom to focus on what's truly important, it could also strip the IS group of talent, clout and independence

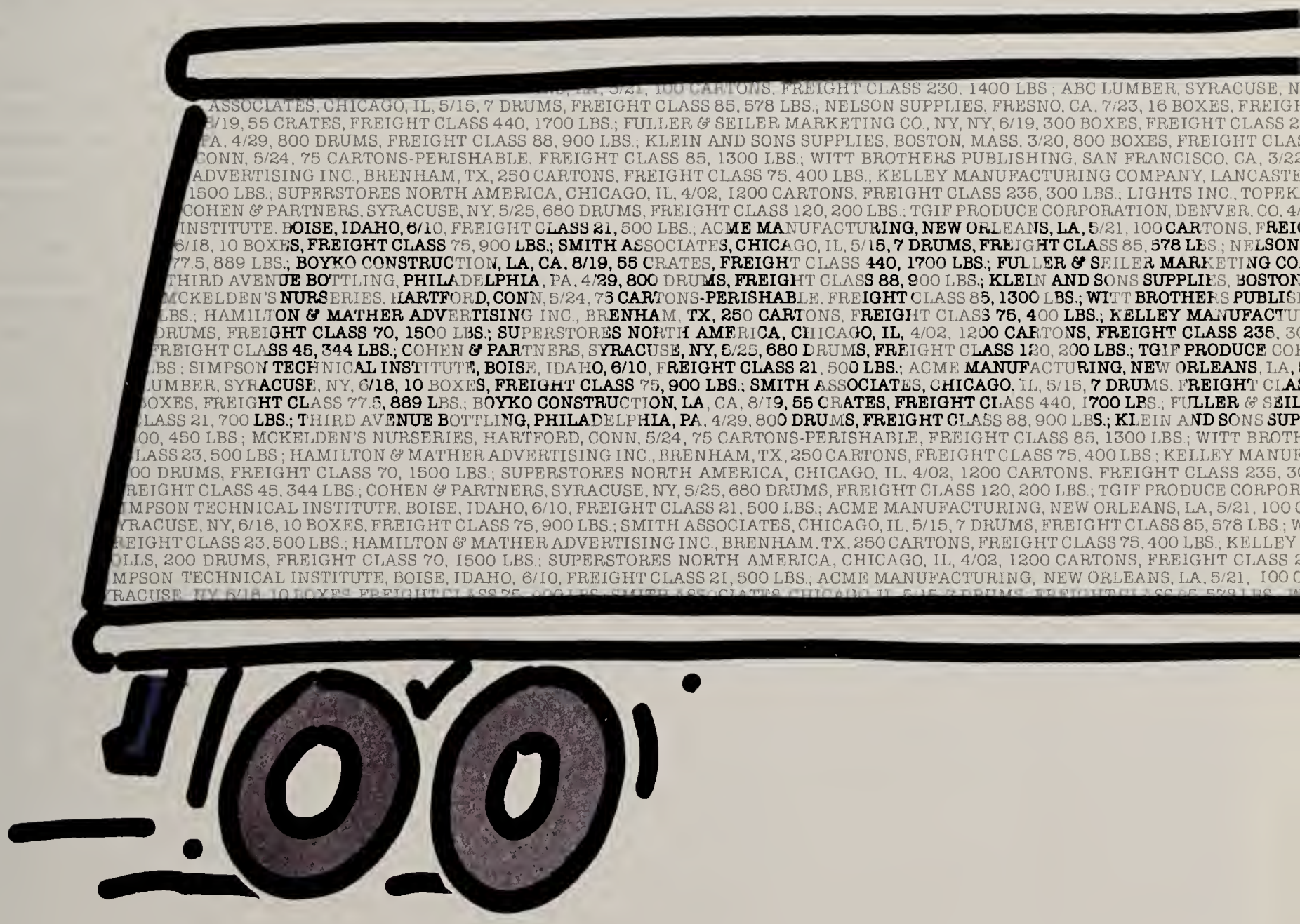


Everything old is new again in third-party systems support. Third-party management of IS resources has been going around in various forms and under a variety of nomenclatures for nearly three decades and is now enjoying a resurgence of attention from users. This year it's called outsourcing, and IS executives are wondering whether it's the next crucial business opportunity or just this year's contagion.

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The most common and least controversial form of outsourcing is contracting out data-center operations. In the old days, this fell under the heading of contract maintenance or facilities management. But the definition of outsourcing has expanded as back-office applications have moved to the strategic forefront, and as users' needs have become more complex. Today, outsourcing may involve application development, systems integration, and the management of communications networks.

The business environment is ripe for outsourcing. Mergers, acquisitions and LBOs have forced many big companies to look for ways to reduce expenses and increase cash flow. "The first area to go to is data processing, because the fastest way to save money is to get rid of the data center," said Jeffery Stein, president of OBS Companies Inc., an outsourcing company in San Francisco.

While businesses increase their commitment to and reliance on information technology, they are finding it more difficult to keep up with the leading edge. In addition, mainframe software is increasingly costly, as is the constant investment in new products of any kind. In outsourcing, vendors and management consultants see an opportunity to diversify their business offerings and make more money, and users see an opportunity to get rid of some of their technology headaches and concentrate more on their business goals.

"I've been doing this forever," said Bill Jonopulos, director of information technology for Kinney Wallcoverings in Oakland, Calif. Kinney got involved in outsourcing nearly 20 years ago and now outsources all of its IS operations, including a fully integrated inventory and order-processing system. "The reason that I do it," Jonopulos continued, "is that I have access to state-of-the-art equipment and data and software without having to be concerned about doing it myself and managing it myself. I also have access to very high-level programmers without having them on my staff. I concentrate on getting things done with our system."

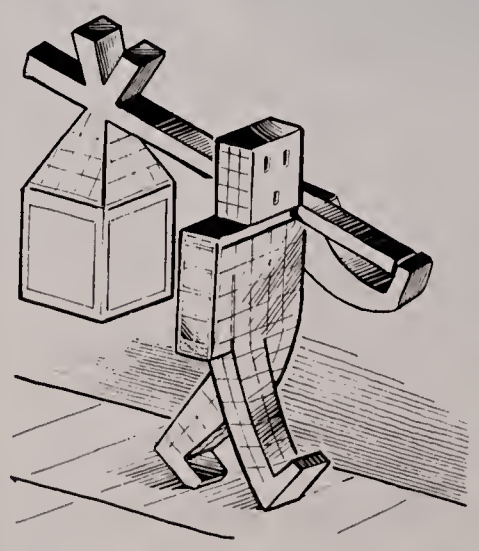
Despite the fact that it's been around for a while, outsourcing has never been a high-visibility management option. Extensive outsourcing has traditionally been viewed as the route for companies with neither the financial means nor the volume to justify owning their own systems. Other traditional outsourcing customers have been slow-moving organizations with very high-volume processing needs, such as government agencies and insurance companies.

But the hype surrounding outsourcing has mounted in the months since Eastman Kodak Co., of Rochester, N.Y., decided to outsource much of its IS operation in order to better concentrate on business opportunities. Kodak contracted out data processing to IBM Corp., telecom responsibilities to Digital Equipment Corp., and PC support and maintenance to BusinessLand Inc. According to users and long-time vendors, the unprecedented level of commitment to outsourcing in a business of Kodak's size, coupled with recent media and consultant hype, have caused many of Kodak's peers to take a second look at outsourcing.

Outsource vendors sell their services based on the argument that it's cheaper for them to manage mainframes, people and space for a lot of clients who share the resources than it is for individual clients to manage separate but similar operations. They also argue that technology today is more than an administrative investment. Technology changes so rapidly and people rely upon it so much more that the amount of money they must invest and the frequency with which they must invest it are constantly accelerating, according to David Armour, a

Inhuman Resources

Outsourcing not only displaces systems, it can cause considerable employee upheaval as well



In the 1970s, outsourcing (then known as facilities management) was relatively unpopular among IS staffs. According to Jeffery Stein, president of OBS Companies Inc., an outsourcing company in San Francisco, if a DP department had problems, the company president was likely to insist on an improvement without really having a grasp of the systems problems or the cost of fixing them. While DP responsibility belonged to the department manager, decisions on spending and options such as facilities management were made by the president. In such an environment, according to Stein, it would not be unusual for "the DP manager [to] come to a meeting one morning and have the president tell him, 'Congratulations, you work for EDS now.' " (EDS is a systems integrator based in Dallas.)

Outplacement as a result of outsourcing may no longer be so abrupt, but there is little doubt that outsourcing may lead to dissatisfaction and upheaval for many employees. Companies that outsource will generally retain only a small departmental

managing partner with Andersen Consulting's North American systems management program in Dallas.

"Companies that used to be able to deal with things internally with a limited staff now find it's a never-ending battle. . . ," said Armour. "And as companies start to use a broader range of technologies, it's harder to justify keeping an expert in house for each technology."

According to many outsourcing proponents, the rapid rate of technological change that drives companies to outsource is also what makes outsourcing possible. Advances in communications, software design and distributed processing make it possible for providers to support 50 different clients on the same equipment, to write software for their LANs that looks like the software they use on the mainframe, and to give them instant access to all of their data and

"As companies start to use a broader range of technologies, it's harder to justify keeping an expert in house for each."

–David Armour

machines—almost as if everything were on site.

Today's systems can be designed to be transparent to the user. That is to say, the user can be sitting at a PC accessing information from one mainframe in the next building and from another in the next city and never know the difference. "I'm in a position now where I'm not concerned about whether or not a particular job can be done [with my own resources]," Jonopulos said. "If it can be done, I can get it done."

Jonopulos has a trust of outsourcing born of long association, but more than a few IS managers balk at the idea of giving carte blanche to someone who not only isn't a part of their company, but isn't even in the same business. Outsource vendors point out that that is the beauty of the system. The argument goes that their business is running DP operations. Yours, perhaps, is making those little things that go on the ends of shoelaces. You stick to shoelace aglets and they'll take care of the rest.

The argument makes sense, but some users and consultants have expressed concern that giving up control of information systems could mean giving up control of a company's staff—both to keep the outsourcer honest and to maintain the link between the third party and the client company's business objectives, according to Howard Anderson, managing director of the Yankee Group, a consultant and market researcher based in Boston. As a result, Anderson said, companies may "lose the best [IS] people because the best people don't want to be auditors and accountants."

Andersen maintains, however, that outsourcing will have few negative effects on outplaced employees because vendors often guarantee jobs to the best and brightest of them. Anderson argues that outsource vendors can offer wider opportunities in information systems than can, say, a bank. For bank employees who would rather be in banking than in the outsource business, he said, "there are more opportunities at EDS for good people than at a good bank. There are 50,000 people at EDS. They've got banks [as clients] up the kazoo."

David Armour, a managing partner at Andersen Consulting's systems management practice in Dallas, admits that there is an adjustment period in any outsourcing project, in which "there are a lot of people that don't want to work for a new employer, and who are unhappy. And some people just don't want to adapt to something new."

Because the Andersen outsourcing practice is growing, Armour said, "we have needs that generate opportunities [for IS employees]. If there's a large consolidation, we have, in some cases, relocated people. There are some tough personnel issues, but I think for the good people, it's usually a good deal."

The level of outplacement, naturally, depends on the level of outsourcing the company chooses. "You do lose people," admitted OBS's Stein, "but you don't lose as many" in outsourcing only data center operations. "You're really only talking about systems programmers and people like that."

Ray Perry, vice president of Avon Products Corp.'s information services division in Rye, N.Y., advises taking an above-board approach to evaluating outsourcing, lest the "good" people quit out of fear before a decision has even been made. Avon's IS staff actually participated in the evaluation and bidding from outsourcing vendors. When the company decided its own IS organization was more efficient than the bidder, the employees were as proud as they were relieved, Perry said. And there was no resentment, because there was never the sense that management was trying to trim them from the picture.

Not every firm can enlist such support from people who stand to lose their jobs at the end of the project, however.

"There's a big management issue here," warned Stanley Welland, manager of corporate telecommunications at General Electric Co. in Bridgeport, Conn. Welland estimates that he has reduced his staff by half in the last three years. "There's an old saying, 'You can never go home again.' If you give up a lot of [IS] talent, you can't just say I want to go back. Once you give up your organization, you can never go back."

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pany's strategic direction. Vendors and some users argue, however, that "control" is in most cases more of a turf issue than a strategic one.

"To some extent, I believe the IS world has overplayed this whole concept of how strategic [the issue of control] is," said Henry Pfendt, director of IT services at Kodak. "Operating internal MIPs factors and telcos is not . . . strategic. It's how you use the information that's strategic."

"I think those are all emotional issues," added Fred Cisewski, senior vice president and MIS director for Bank South Corp. in Atlanta. "When you're talking about outsourcing, I think you need to take a look at how you're doing [your] business."

Darwin Deason, chairman and CEO of Affiliated Computer Systems Inc. (ACS) in Dallas, is a veteran of the days when outsourcing vendors were known as computer utility sources. One of the obstacles outsourcing companies such as ACS face, according to Deason, is the "stranglehold" that IS directors have on their CEOs' perceptions of system ownership. "MIS directors have committed this great fraud on America where technology drives so damn many decisions instead of being a service to the corporation. The biggest concern CEOs have [about outsourcing] is the concern of giving up control, [because] the MIS directors have convinced them that they must own their own computers, . . . and that's complete bullshit."

Andersen's Armour agrees that the concern over confidential strategic resources is usually "a lot of smoke. If you're dealing with a reputable firm, it's handled by a confidentiality clause." In addition, said Deason, "the strategic control is in the applications side," and the IS director will manage applications in most cases.

"We wouldn't want to give up our applications software, because that's our business," Cisewski said. "And someone else would be determining the priorities, determining what products you have, and maybe even determining your ability to offer products."

"But you don't have to own the atomic energy plant to be able to have lights in your house," Deason said.

Added Howard Anderson, managing director of the Yankee Group in Boston, "What I see happening is that the outsource vendors are . . . going to try to neutralize the IS guy and make the pitch to the CFO and the CEO."

Regardless of potential turf issues, vendors and IS managers agree that clients should outsource selectively, developing and monitoring those applications critical to the success of the business. Clients and vendors must also work out performance measures and areas of special attention in their contracts.

"The whole secret to successful outsourcing is the contract," said Stanley Welland, manager of corporate telecommunications for General Electric Co. (Welland is based at GE's Bridgeport, Conn., facility), which has outsourced its telecommunications operations and has "probably the largest private voice network in the world.

"[The contract is] the vehicle that the two companies have to live with over the life of the deal," Welland said. A well-thought-out contract can address specific areas of customer concern. It can contain performance-level clauses that ensure response time and up time.

"I think it gets more complex as you put more and more of the IS group outside," said Robert Walsh, vice president of the Boston Systems Group Inc. in Boston. "You have to worry more about response time and communication. In the corporate culture, there's a lot of communication that's taken for granted." Outsourcing calls for "a more formal and rigorous management style" to handle that kind of interaction, he said.

Establishment of this management style is critical to the success of an outsource contract, according to Robert Suh, an associate in the Information Management and Systems group at Temple, Barker & Sloane Inc. in Lexington, Mass. "If you're a Kodak and you're a major chunk of this vendor's portfolio, they're going to bend over backward to keep you happy. If you're a relatively small part of the vendor's portfolio, what do you think is the likelihood of their giving you priority service?"

Speaking for Kodak itself, Pfendt explained that the company and its outsourcing partners have established a system of checks and balances to monitor quality and performance. Kodak's quality-control groups include a relationship-management committee to oversee strategic business plans and relationships with the vendors, three separate management boards made up of senior people from Kodak and the respective outsourcing companies to make sure that each alliance remains beneficial to both parties, advisory

Leading U.S. Outsourcing Vendors

COMPANY & LOCATION	ANNUAL REVENUES	RELATIVE MARKET SHARE
EDS Dallas	$5.47B	40.1%
IBM Corp. Armonk, N.Y.	$3.2B	23.4%
Andersen Consulting Chicago	$1.44B	10.5%
Computer Sciences Corp. El Segundo, Calif.	$1.44B	10.5%
Digital Equipment Corp. Maynard, Mass.	$1B	7.3%
KMPG Peat Marwick Montvale, N.J.	$600M	4.4%
AT&T New York	$500M	3.7%

The worldwide outsourcing market, including federal and commercial revenues, is $25.6 billion. More than half of that is accounted for by the above U.S. organizations, which have commercial revenues totaling $13.65 billion.

SOURCE: THE YANKEE GROUP

councils to provide direction and review progress toward stated objectives for each liaison, and control panels to monitor performance, service-level objectives and customer satisfaction.

The willingness of Kodak's partners to cooperate gives weight to outsourcing vendors' claims that they're not interested in locking in an unhappy customer. "We don't approach this like a government procurement exercise where you give them some low-ball approach and for everything that's not in the contract, you stick it to 'em," Armour said. "We have a contract in place that gives them the framework for flexibility. Some people want to buy those rigid services, and others want a more flexible agreement that doesn't require a bevy of lawyers every time you want to make a change."

Contracts that clearly state performance requirements can provide an easy legal out if a vendor performs poorly or doesn't respond to customer concerns. But bringing an operation back in-house requires more than simply moving the machines back to home base. Systems and IS expertise are acquired over the long term. Unless a company hires systems programmers and consultants away from its ex-outsourcing provider, it might have to start from scratch. "It is extremely difficult to disengage a contract," said Ray Perry, vice president of IS at Avon Products Corp. in Rye, N.Y. "You've eliminated dedicated people. Three or four years later, you've got to start from ground zero."

A strong proponent of outsourcing, Kinney's Jonopulos nevertheless agrees that there are some potential drawbacks. "I got into a trap with a very good national company that had a canned package. They came back and said, 'We're going to raise your prices.' We said, 'What options do we have?' They said, 'You can pay the price or you can get off the system, but let me tell you that nobody of any major size has done that.' " Jonopulos opted out of that contract, but recreating the entire application in-house took seven months and 500 man-weeks of development.

"You don't have to own the atomic energy plant to be able to have lights in your house."

–Darwin Deason

In addition, Temple, Barker & Sloane's Suh pointed out, the outsourcing vendors that constitute the growth segment of the market are relatively young, and new providers are springing up with every article and press release. This immature industry is offering to contract things it has little experience with. "What's missing [from outsourcing contracts] is an honest assessment of what the downside risk is . . . and what the impact would be on the business," he said. "In the case of one of our clients, who relied on IS for a great deal of customer contact, we expressed reservations [to the outsourcing vendor]. When the vendor offered to post a bond to cover any business risk to the client, we kind of laughed and asked, 'How much are you going to pay us?' "

Estimates of the percent of user companies that will give outsourcing a try in the next three years hover in the high teens and low 20s, according to market researchers. But Anderson claims that the outsourcing furor will force IS organizations to become more efficient lest they lose credibility and budget. He calls this "the outsourcing threat." Other market watchers agree in principle but consider outsourcing more of a tonic than a menace. "You're basically trying to create more freely competitive economic solutions for your systems problems," said the Boston Systems Group's Walsh.

Some consultants and IS managers discount the potential influence of the outsourcing threat. They point out that outsource vendors have to make a profit. IS departments generally only have to justify costs and show a decent ROI, according to Suh.

Between the necessary profit margins and the savings that many customers will expect, outsourcing vendors could very well be at a competitive disadvantage when up against a well-run IS organization, according to Avon's Perry. "We were actually surprised to discover that none of the [vendors] could offer us an attractive enough deal to make it worth taking the risk," he said. Perry was looking for a 15 percent savings on IS costs at the Manhattan-based cosmetics manufacturer.

Even for the most efficient of IS departments, there are some cases in which outsourcing makes good sense, according to Suh. Companies involved in mergers or acquisitions might solicit a third party to consolidate data centers or handle remote operations. A business facing a long-term migration to a different computer system might outsource the operation for the interim.

But most people agree that outsourcing is by no means an all-or-nothing proposition and that those who choose to outsource will do so only selectively. "Are there other Kodaks who are going to take their whole IS function and broker it out?" Suh said. "My sense is, no." In fact, Suh believes that vendors will become more rigid and selective as well, once they begin to realize their own limitations and liabilities.

In the meantime, don't expect mass outsourcing conversions. "Only two or three fairly good-sized organizations out of how many huge corporations in the country have turned to outsourcing," Deason pointed out. "I don't think it's going to cause a huge trend in the Fortune 500 in the short term. Over the longer term, [however,] I think it's a trend."

According to Deason, "the economics [of outsourcing] are so compelling" that corporate America will have to evaluate it, at the very least.

The primary benefit of this trend, added Perry, is that "taking a good look at outsourcing forces you to take a good look at your business." CIO

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After years of haphazard attention, the White House IT infrastructure is approaching a state of executive order

ALL THE PRESIDENT'S COMPUTERS

BY ALLAN E. ALTER

AS ASSISTANT TO THE PRESIDENT for Management and Administration, she runs the White House, Camp David and Air Force One. She is also the steward of the White House's computer and communications systems. But when J. Bonnie Newman wished to illustrate the power of technology, she turned to television.

"I received a note from some acquaintances in the foreign service who saw a profile on me that CNN [Cable News Network] had run," said Newman. "According to their note, what was so ironic was not that they were in Pakistan, but that the broadcast was beamed down from a Russian satellite. Within days of it being filmed here in the White House, the profile was viewed in Pakistan." This underscored for Newman the fact that TV viewers all over the world can "pick up live broadcasts when the president wishes to speak to the world. No longer are people wondering about the president, who he is, and what his programs are."

Referring to a time when she her-



J. BONNIE NEWMAN: *The IS mission is*

PHOTO RIGHT BY MANUELLO PAGANELLI/STYLING BY MARCIA DIETC; PHOTO TOP BY DIRCK HALSTEAD/GAMMA LIAISON



to help "effect the president's program through reliable information and effective communications, rather than . . . trying to overcome resistance.

self appeared on television was somewhat unusual for Newman, a New Hampshire Republican with no IS background but plenty of experience in the Reagan administration. During the interview she generally avoided talking about herself or other presidential aides, preferring instead to exalt the boss. " 'A President Who Cares' should be the title of the article," she suggested.

But referring to TV was quite natural for her as a White House official. As Hedrick Smith, a former Washington correspondent for *The New York Times* wrote in his book *The Power Game: How Washington Works,* mastering the art of governing today means mastering Washington's "power games": advancing your agenda, building a favorable public image, forging coalitions and defeating your opponents among them. The Republicans in the White House are widely recognized for their skill at using the electronic media to play the game. Newman mentioned one example—a voice-messaging system that automatically dials and transmits the president's pre-recorded messages over telephone lines to radio stations throughout the country.

However, Newman doesn't speak of computers as an aid to winning Washington's power games. For instance, when asked whether the Office of Management and Budget's computer analyses were used to build the administration's case in such partisan sorties as the budget battles on Capitol Hill, Newman said, no, "we think . . . more in terms of utilizing the technology to effect the president's program through reliable information and effective communications, rather than the concept of trying to overcome resistance.

"Our main concern is keeping the president informed," she said. "The president has three jobs: commander-in-chief, chief executive and head of state. Timely information is essential. [He] must have reliable information in an extraordinarily prompt fashion, and the ability to collaborate with the Cabinet and the government."

Newman stressed that George Bush is a "very hands-on, proactive user of technology—from picking up the telephone, to using electronic mail to communicate with staff here and on the road, [to] retrieving data." However, she added, he does not run the government by sitting in front of a computer screen. Like other presidents, when Bush seeks information, he asks others to find it for him. According to Newman, she herself often follows up a presidential request for information.

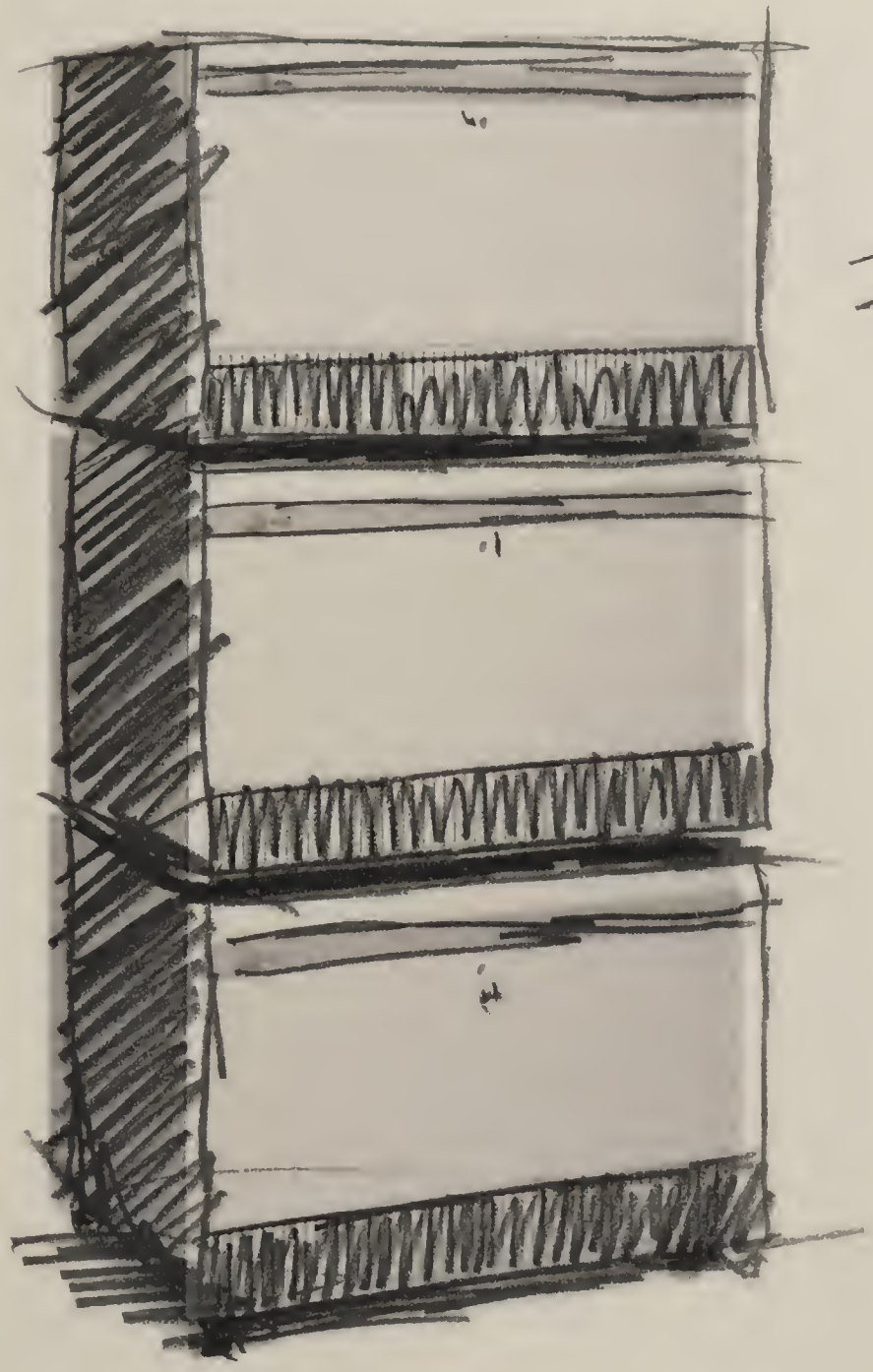
> *"Each administration brings its own touches, [but often these are] more quick fixes on top of quick fixes. We have an assemblage of hardware and systems that did not necessarily marry well together."*
>
> *–Paul W. Bateman*

Abraham Lincoln's assistant for administration probably filled much the same function. But technology has advanced far beyond the 1860s—and the 1980s too. So Newman and her chief aides directly responsible for White House computing—Deputy Assistant to the President Paul W. Bateman, who as director of the Office of Administration is directly responsible for the White House's day-to-day operations, and David L. Stonehill, who actually manages the White House's systems as director of the Information Resources Manage-



PAUL W. BATEMAN: *Working to revamp a system whose hardware "belonged more in museums."*

PHOTO BY MANUELLO PAGANELLI



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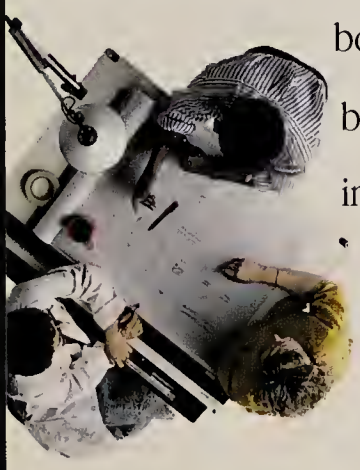
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The EOP must follow the U.S. General Services Administration's federal procurement procedures like any other government agency.

ment Division of the Executive Office of the President (EOP)—are taking a fresh look at the White House's information and computer architectures.

The three are now in the final stages of creating a comprehensive computing plan for the EOP, which not only includes what is formally known as the Office of the White House, but the Office of Management and Budget, the National Security Council, and 10 other non-Cabinet organizations reporting to the president.

All three are new to this task. Neither Newman, Bateman nor Stonehill held IS responsibilities in the Reagan administration. Newman had been both assistant secretary of commerce for economic development and associate director of the Office of Presidential Personnel. Bateman had served with Newman at the Commerce Department and was the nation's coin-maker and currency-printer as deputy treasurer of the United States. Stonehill enjoyed a distinguished career in academic computing. His last post before moving to Pennsylvania Avenue was vice provost for computing at the University of Pennsylvania.

"We came in," Bateman said, "looked at the existing systems . . . and found by and large a very antiquated system, with hardware that belonged more in museums than offices. We have begun a measured program to modernize the equipment and provide the software and related systems necessary to have a fully linked system, so that all the people here can communicate information in an easy and quick manner.

"It's not meant as a criticism," Bateman continued. "This is a place where a lot of people pass through. Each administration brings its own touches, [but often these are] more quick fixes on top of quick fixes. We have an assemblage of hardware and systems that did not necessarily marry well together." The first months in the executive mansion were spent assessing the situation, seeing how the new administration would operate, talking to users and looking at "our financial situation to find out what was affordable and doable," said Bateman. Then, said Newman, they upgraded "the equipment our managers work with daily." While the EOP's computing budget fluctuates from year to year, on average it runs at about $18 million to $20 million for non-classified systems.

The President's Not-So-Mobile Phone

When he goes calling, the chief executive travels anything but light.

Wherever the president goes, an enormous apparatus follows. Consider Ronald Reagan's overnight visit to then-Senate Minority Leader Howard Baker's home in Huntsville, Tenn., as described by author Hedrick Smith, a former Washington correspondent for *The New York Times* and author of *The Power Game: How Washington Works.*

Smith quoted Baker as saying: "They sent a technical crew in there, days ahead of time, and asked for 56 telephone circuits into my guest house. And the poor little old telephone company out there, which is an independent telephone company, I don't imagine had 56 telephone circuits or trunk lines for the whole community."

Reagan's team brought in a voice-encoding machine—"you know, one of these secure-line jobs," Baker said—and put it in the room adjacent to the president's. They set up several direct tie-lines to the White House and had direct tie-ins to the airport, the hospital and the highway patrol.

The entire network, Smith wrote, was governed by a portable switchboard, which was run by the Army Signal Corps out of a communications van. It was parked near the senator's dog pens, "setting up howls from Mr. Baker's beagle and his Saint Bernard," Smith wrote. As the senator recalled, "the dogs were terribly perplexed by all this."

—A.E. Alter



PRES. REAGAN: *Always wired*

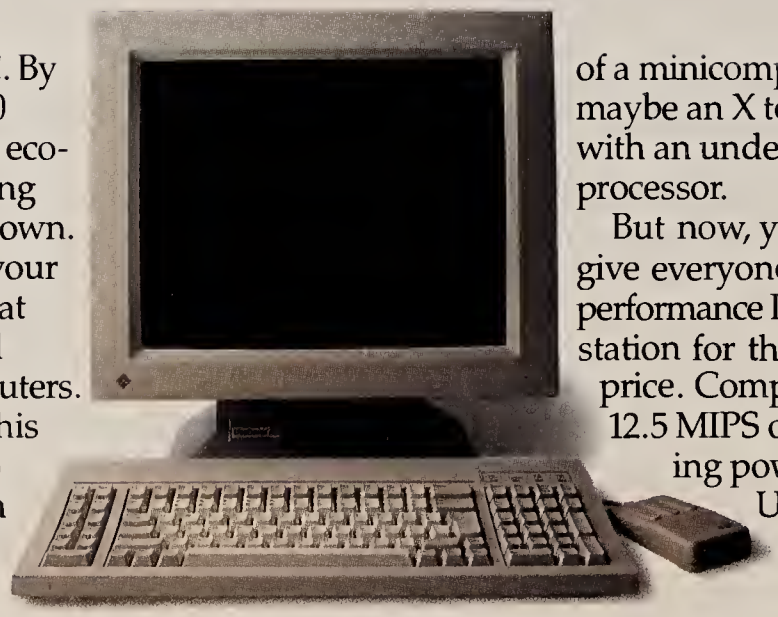
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DAVID L. STONEHILL: *Organization issues are key to long-range planning efforts.*

Bateman found another problem when he took his post. Although "people had hardware on their desks, they weren't given the tools necessary to do the things they really wanted to do," he said. "It's not enough to put a PC in someone's office—you have to ask what they really need, then provide training. We didn't have an adequate training program when we came in." People were more or less "plopped down at the terminal and told to figure it out. We now have a training center with regularly scheduled one-on-one training sessions so people can use the systems to their maximum level."

Now the focus of White House IS planning efforts has shifted to the long-term question of creating an organizational infrastructure. Newman, Bateman and Stonehill are rethinking how the White House works with computers, said Bateman—to make it possible, as Stonehill put it, for the staff "to work in new ways."

Technology isn't the problem, said Stonehill. Assembling an enterprisewide network has its difficulties, "but technically, IS people know how to do it." Organizational problems—the impact of information on organizations and their management—"those are the key questions we are looking at in our planning."

Computing professionals, Stonehill continued, know little about doing what libraries have done since the Great Library of Alexandria 2,000 years ago, which is "to assemble information to answer a simple question. What should the budget be for this agency? What are all the factors bearing on the political scene in a far-away country? It's a very complex information environment.

"We have a potential to acquire and organize information in response to individual issues and questions," he continued. "The closer we get to understanding an individual's learning and research process, the more we start acting like librarians."

Newman and Bateman referred to another organizational principle behind their efforts to rebuild the White House's infrastructure. Newman said her staff is attempting to construct an organization that "reflects the president's approach to managing government." But, she added, they must also remember that the presidency as an institution transcends the personal requirements of the individual office-holder. "We not only have to think about our needs today," Bateman agreed, "but the needs of those who come after us."

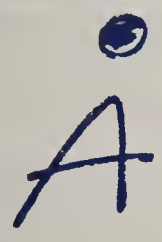
Computers have become a "fundamental part of our daily life here," said Newman. "The world moves too fast and has become too small to try to manage information and make timely decisions without them. I doubt whether we could do our job well on behalf of the president without [them]."

Most of the president's senior officials must agree with Newman. Out of a total White House staff of 380, Stonehill said, there are approximately 200 computer users in the White House proper, including senior staff (assistants, deputy assistants and special assistants to the presi-

> *"We need to be able to assemble information to answer a simple question. What should the budget be for this agency? What are all the factors bearing on the political scene in a far-away country? It's a very complex information environment."*
>
> *–David L. Stonehill*

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The National Security Council, even in the aftermath of the Iran-Contra affair, remains the only part of the EOP with its own separate computer system.

dent), and their support staffs.

White House Chief of Staff John Sununu, to whom Newman reports, is one high-level official who takes a strong interest in the technology itself. Before entering politics, the former New Hampshire governor had been dean of engineering at Tufts University. Newman described him as "a very sophisticated and enthusiastic user of technology."



JOHN SUNUNU: *technology enthusiast*

PHOTO BY DIRCK HALSTEAD/GAMMA LIAISON

But while the White House employs "all of the tools of modern-day technology," said Newman, nothing that was discussed is a preview of the 21st century. Technologically speaking, the White House is attempting to catch up with the times.

It's worth noting that in doing so, the EOP must follow the U.S. General Services Administration's federal procurement procedures like any other government agency. "We don't have the luxury the private sector has of choosing what [we] want and just buying it," said Bateman. "We have to follow very clear and specific statutory and federal guidelines."

Standardization is an important part of the White House's IS plans. "We are looking at ways to provide cooperative processing," said Stonehill. Word processing would be run on personal computers while file storage, distribution and electronic mail would become "functions of the central machines." Stonehill hopes to move away from the three E-mail directories now in place in the EOP to a "coherent" E-mail system that can be integrated with PCs and WordPerfect. The PROFS system now in use, which became famous during the Iran-Contra scandal, is being discarded. Stonehill said that it "sort of presumes an IBM DisplayWriter base," which is also being abandoned.

Weaning high-powered officials from familiar software to new standards may be difficult in a place where, as Bateman put it, "the urgent pushes aside the important." Up to now, Stonehill's office has supported whatever programs White House staffers preferred. But Stonehill plans to make WordPerfect the only document-interchange standard for transmitting text. Support—such as training, PC configuration and PC consulting—will only be offered for WordPerfect. By and large, said Stonehill, this carrot-and-stick approach to standardization is working.

Executive information systems and management decision-support systems have yet to come to the White House. There is no system in place to help the president and his staff frame issues, set deadlines, coordinate work and ultimately analyze findings and draw up policy. "We have an eye to those types of systems," Bateman said, "[but they] fall into the category of things we are looking into in the out years. They will take a great deal of planning on our part."

White House staffers receive a small forest's worth of paper every day in the form of news summaries and government reports. Now Stonehill's staff is creating an online system that allows officials "one-stop shopping" for "basic, real-time information" at their desktop computers. The system includes the AP and UPI news wires, reports on the financial markets, and updates on Capitol Hill activity. "We are still shopping for [information] services to bring online," Bateman said.

"We are trying to figure out which ones are most useful to our decision-makers," added Stonehill.

The EOP's systems can also download certain databases maintained by other government agencies into the White House computers. Bateman declined to say which agencies.

Altogether, White House technology tends to run on the conservative

TECHNICAL PROFILE

The Executive Office of the President (EOP) not only comprises the White House itself, but a dozen other non-Cabinet organizations reporting to the president, including the Office of the Vice President, the Office of Management and Budget, the National Security Council, and the National Space Council. All told, the EOP employs approximately 1,750 people. Except for the National Security Council, which maintains its own computer systems, all of the organizations under the EOP are served by the computers operated by the EOP's Office of Administration. The president and his staff are currently supported by an amalgam of

side. "We try not to be experimental here. We have to live with a zero margin for error." But the White House does have systems that, while not experimental, are certainly out of the ordinary.

The Office of Management and Budget, which is responsible for drawing up the White House's trillion dollar-plus federal budget proposals, employs powerful budget-analysis, modeling and forecasting systems and econometric modeling systems. They go back to David Stockman's time as OMB director in the early 1980s, but have been further developed. The EOP employs IBM 3083 and 3081 mainframes as hosts; they run MODEL 204 (M204), a software package by Computer Corporation of America based in Cambridge, Mass., that is normally used as a commercial database.

According to Stonehill, the White House uses M204 "more as an application to support analyses demanded by OMB than as a common database." Stonehill first described it as a gigantic spreadsheet of tremendous complexity, but found that to be too trivial a description. Rather, he said, it is an econometric model.

According to Newman, communications links have recently been set up between the federal agencies and the systems used by the OMB. Now there is "little paper flow from one agency to another during the budget process," she said. Not only does this cut the time it takes to draw up the budget, but it permits "a much deeper analysis to take place [using] a higher quality of information."

Some White House systems, of course, are not open to public scrutiny. There is the question of maintaining data security, especially where classified information is involved. Such information is segregated onto an entirely separate computer network. The National Security Council, even in the aftermath of the Iran-Contra affair, remains the only part of the EOP with its own separate computer system. "The principle is: If you can't be connected to it, you can't get at it," said Stonehill. Further than that, the EOP's IS managers would not go. As Bateman put it, "The best security is the security we don't talk about." CIO

Stonehill's staff is creating an online system that allows officials one-stop shopping for basic, real-time information. . . . The system includes the AP and UPI news wires, reports on the financial markets, and updates on Capitol Hill activity.



PRESIDENT BUSH: *Unlike some predecessors, "a very hands-on, proactive user of technology," said Newman.*

PHOTO BY DIRCK HALSTEAD/GAMMA LIAISON

communications networks, personal computers, mainframe hosts and departmental minicomputers. The applications used day-in and day-out by most White House officials are PC-based.
The following is a partial list of equipment used by the EOP; many systems were not divulged for security reasons.

Large and mid-range systems: The EOP employs IBM Corp. 3083 and 3081 mainframes as hosts and uses both IBM 9370s and Digital Equipment Corp. VAX minicomputers.

End-user systems: While the White House is preparing to standardize on the IBM PS/2-55SX, most senior officials now use IBM AT or AT-compatible PCs. Microcomputers from other manufacturers are also in use—Assistant to the President for Management and Administration J. Bonnie Newman uses a GRiD laptop, and White House Chief of Staff John Sununu uses a Compaq '386. (IBM DisplayWriters, mainstays during the Reagan years, are being discarded.)

Software: The White House's mainframe hosts run M204, a software package by Computer Corporation of America. WordPerfect is now the standard word-processing package. Lotus 1-2-3 is used by many "as a communication and what-if medium," said David L. Stonehill, director of the EOP's Information Resources Management Division. Stonehill's staff is now looking at literature-search, context-search, and presentation-graphics packages.





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BEYOND THE BEANS

Guess which management player wants to shed his limited, specialized role in favor of more strategic responsibilities . . .

The CIO isn't the only executive with a yen for a wider, more influential role in corporate decision-making. Consider the chief financial officer, sometimes known, unflatteringly, as the bean counter. Many CFOs see their jobs growing beyond the beans of finance and accounting to encompass a broad business agenda.

In some versions of the CFO's vision of the future, that expanded role includes ultimate authority over information management—putting CFOs on a collision course with CIOs for control of the technology resource. In fact, some CFOs go so far as to assert that the CIO position came into being only through their own neglect of technology.

Outside of the CFO profession, there is some skepticism about its future growth prospects. In the January 1990 issue of *CIO,* for example (see "Good News, Bad News"), Michael Bealmear, partner in charge of planning for Coopers & Lybrand's Computer Assistance Division, argued that the CFO is going nowhere in the corporate hierarchy, "has no constituency or empire, . . . isn't considered to be a driver of the business, [and] is viewed as necessary overhead."

This discouraging summary may well

BY ALLAN E. ALTER

ILLUSTRATIONS BY KEVIN HAWKES

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be true for the CFO whose role is limited to traditional financial duties, such as financial reporting and control over expenditures. But when CFOs gaze into the crystal ball predicting their destiny, they see for themselves an expanding, more important role in corporate life.

"There's increasingly a broader role for CFOs in strategic planning and development," said Robert C. Lowes, the executive vice president and CFO of Grand Metropolitan's Minneapolis-based Food Sector, which includes Pillsbury, Burger King and Haagen-Dazs. The CFO, Lowes continued, is becoming the corporation's "assistant business manager—the person who is expected to be proactively involved in the business as a whole, stay on top of all the pieces, and keep them all in perspective for busy CEOs."

"CFOs more and more are becoming the strategic planner and adviser for the CEO," said Victor H. Deutsch, vice president of finance at Fishking Processors Inc., a $100 million frozen-fish company based in Los Angeles. The traditional financial roles of controller and treasurer are being delegated to the second tier, while the CFO is acting more as the CEO's right-hand man.

As KPMG Peat Marwick's national practice director for financial management consulting, Lawrence S. Maisel enjoys a front-row seat in the arena of finance. The New York-based partner also argues that the CFO role has become broader. "The CFO role traditionally was more reactive than proactive. The CFO's challenge in the '90s is to go past the financial results, get involved in the budget right away, and become involved in strategic decisions. It's becoming a more business-oriented role than the traditional function [of] managing financial operations and reporting financial results."

Maisel's views reflect a 1988 paper entitled, "Building Global Profitability and Competitiveness: The New Role of Finance," authored jointly by KPMG Peat Marwick and Business International Corp., a British publishing and consulting firm with offices in New York. The paper's findings grew out of a survey of 235 CFOs in 12 North American, European and Pacific Rim countries.

"The role of the CFO is changing dramatically to a more operational managerial approach from a strictly numbers orientation," the survey concluded. "Today's CFO has more influence over operating decisions, is working in areas outside traditional financial activities, and has been elevated in the corporate hierarchy."



The CFO is becoming the corporation's "assistant business manager—the person who is expected to be proactively involved in the business as a whole, stay on top of all the pieces, and keep them all in perspective for busy CEOs."

–Robert C. Lowes



The report is full of indicators that CFOs are busting out of the traditional financial concerns of their profession (see related story and chart). Likewise, a survey of CFOs at Fortune 1,000 companies, conducted by the nationwide executive-search firm of Heidrick and Struggles, arrived at similar conclusions. Six of seven CFOs in the H&S study said that serving as a key member of top management consumes the greatest portion of their time. And when CFOs were asked which areas of expertise will become more important in the next five years, strategic planning and business valuation/acquisitions/divestitures far outdistanced strictly financial concerns such as capital financing and budgeting, tax impact, investment strategy, cost accounting and portfolio management.

How, then, do CIOs fit into CFOs' ambitious and far-reaching views of their own futures? How do CFOs envision their relationships with CIOs?

The majority of CFOs do not oppose an independent role for CIOs. Nearly half (48.5 percent) of those surveyed by Heidrick and Struggles said CFOs should give control of IT to an independent CIO, rather than retain control of IT themselves. Over a third (36.2 percent) held that CFOs should retain control of IT. Just over 15 percent had no opinion.

Two CFOs who argue for a strong partnership or alliance between CFOs and independent CIOs are Robert Patrick, the CFO of Society Corp., a Cleveland-based bank holding company, and Fishking's Deutsch. Both hold important positions with the Financial Executives Institute (FEI), of Morristown, N.J., a 13,000-member organization for financial executives. (Patrick is FEI's incoming chairman, and Deutsch chairs FEI's committee on information management, which has organized conferences on the "CFO-CIO

Patrick and Deutsch argue that partnerships or alliances work well, provided that the two partners are peers. But most CIOs will be "hindered in addressing the overall information needs of the company" if they report to the CFO, unless the CFO is "very unique." Deutsch said that CIOs and CFOs must be peers in their informal working relationship as well as on the organizational chart.

"CFOs tend to look at the world through financial eyeglasses," said Patrick. "The CIO's role is much bigger than that. To ensure a more objective, non-financial approach to information, it would seem to me that the CIO should report to someone besides the CFO." Otherwise, he

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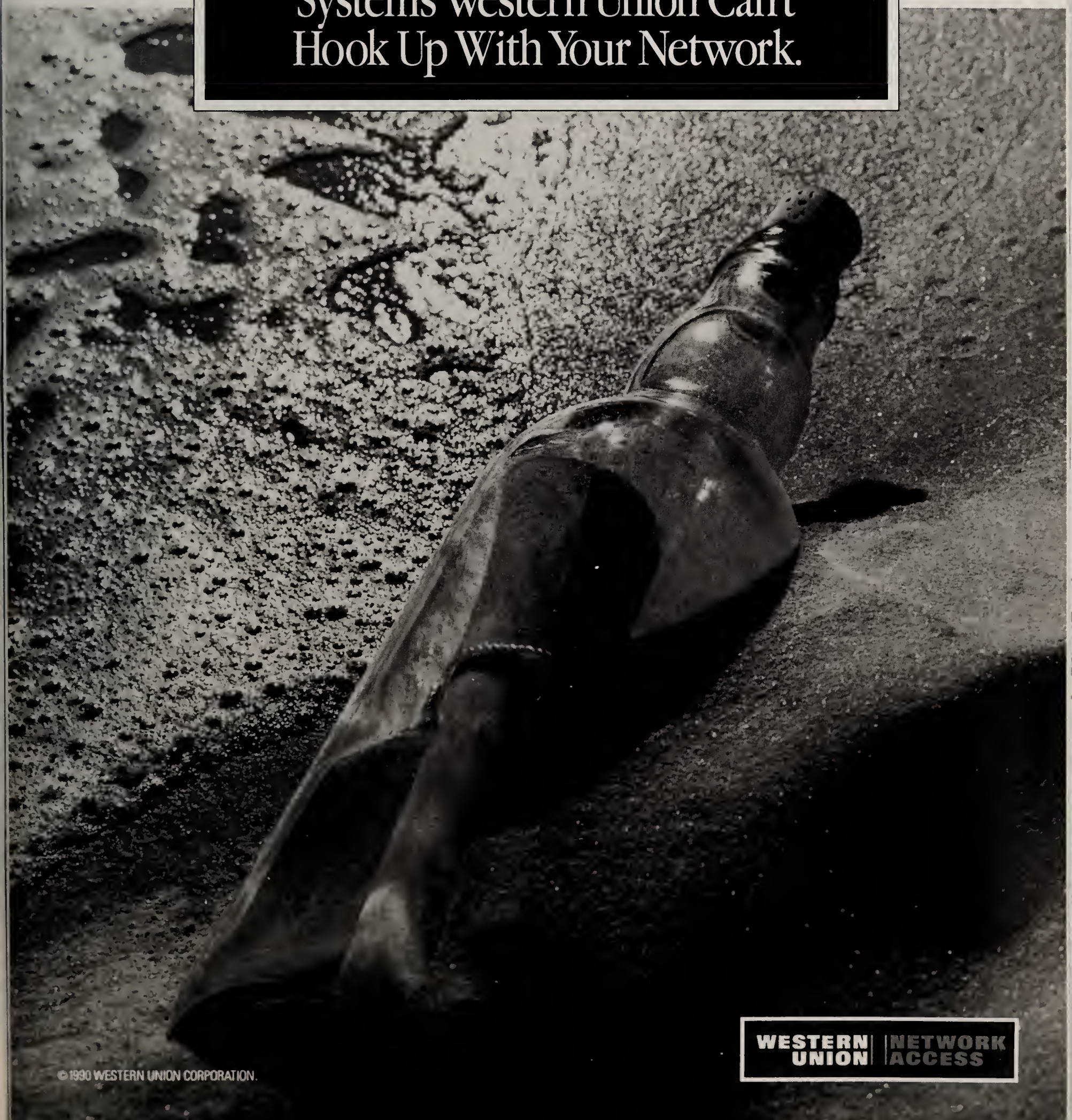
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said, the company will be trapped by the tendency of the finance department to look inside the company for financial data, rather than outside for the non-financial information, such as key performance indicators, needed to change corporate behavior for the better. "If the CIO reports to the CFO, you'll probably have one hell of a financial information system, but I doubt you'll have a management information system."

Patrick cited another reason to keep CFOs out of IS: lack of expertise in technology, and the technological needs of other departments. "I am not qualified as CFO on what the marketing department needs," he said. "I am not qualified to develop a total computerized workstation for banking officers five years from now.

"When CFOs and CIOs are partners," Patrick continued, "the CIO can help the CFO better understand the total information requirements of the company, not just the financial information requirements. [And] the CFO can help the CIO better understand the financial reasons for decision-making." The partnership could do more than help the company make better use of financial information; it could help managers make good use of the mountains of data IS can churn out.

Patrick cited his own relationship with Society's executive vice president of the Information Systems and Services Group, Allen J. Gula, and Society's new financial information system. Gula's independence allows him to "balance what we are trying to do in finance with the other information needs in the company" and develop a "tremendous knowledge of the [corporation's] total information requirement." Patrick doubts he would have had this degree of confidence in Gula and the project if Gula had reported to him.

"I'm not saying that if he reported to me I would lack confidence in what he tells me," said Patrick. "But because he doesn't report to me, I'm sure I am getting his best thinking all the time, as opposed to a bias which I might, unwittingly, introduce into the relationship. . . . As an independent CIO, with no particular allegiance to any staff or line organization other than the IS area, he can be completely independent in his judgments."

Deutsch, who once had doubts about the need for the CIO position, has swung around to Patrick's view because he has come to understand that information is an asset, not a technical function. "If information is an asset, companies need someone with high stature to control it, see how it is developed, and [make certain it] becomes part of the total corporate strategy." Now he supports the concept of a CIO who is a "well-rounded business executive" with sufficient technical knowledge to "relate the technical leads of the company with corporate strategy."

The changes in the CFO role, in Deutsch's view, are "another reason you need a CIO. We are finding information responsibility is being pushed down to lower and lower units in a corporation. But there has to be some kind of coordination at the top of a major corporation. So companies need a coordinator to set standards and ensure [that] information flows are consistent so they can be consolidated at the top of the corporate ladder."

KPMG Peat Marwick's Maisel also advocates a CIO-CFO partnership, but said it doesn't really matter whether the CIO reports to the CFO or not. Determining the reporting relationship depends on the personalities of the two officers and on the corporate culture, he argued. But he stated that the CFO is naturally best

Natural Selection

A study suggests that a climate of corporate flux and heightened global competition lies behind the evolution of the CFO role

What do CFOs see as the forces reshaping their role in the corporation? Why do they think they are becoming more important? And how are they now dividing their time?

According to a worldwide survey of CFOs conducted by KPMG Peat Marwick and Business International Corp., a British publishing and consulting firm with offices in New York, the role of the CFO is expanding primarily due to corporate restructuring and the increasingly competitive global environment.



These factors have made the CFO's traditional tasks of managing liability and devising "an optimal capital structure" even more critical, the report states, because they are closely linked to operating units' ability to maintain overall corporate competitiveness.

The BI/Peat Marwick survey found that helping CEOs with management issues is the top priority for four-

fifths of respondent CFOs. (Supervising the finance function came in second.)

Two-thirds of the CFOs said their influence on operating decisions has increased, while more than half said they now work more closely with the CEO in charting corporate strategies—providing input into decisions involving corporate development, strategic planning, investment/divestment strategies, mergers and acquisitions, corporate administration, government relations and human resources.

Respondents ranked a good business sense and an understanding of operations as the most important traits needed for success as a CFO. Problem-solving ability, integrity, innovativeness, and a vision of the big picture ranked second through fifth, respectively.

CFOs claim to spend 41 percent of their time assisting the CEO. That's even more time than they spend overseeing their own departments. In-depth interviews of 50 financial executives by the survey team revealed that CFOs are delegating financial responsibilities to lower-ranking financial executives to make time for assisting the CEO.

Consequently, the CFO has had to evolve. "The more finance becomes an important aspect of strategic decisions," the study stated, "the more there is a need for the CFO to step outside the boundaries of the finance function itself."

Could this mean an encroachment onto the CIO's turf? That's a possibility, especially considering that 71.4 percent of CFOs regard the deployment of automation/advanced technology as an important step toward achieving corporate goals. That's higher than any other factor, including increasing productivity (68 percent), expanding into international markets (67.1 percent), closing unprofitable/uncompetitive operations (64.1 percent) and entering new market segments (62.3 percent). And it won't take much for them to get in the door: 50.4 percent of the CFOs surveyed are responsible for IS/information management, 38.3 percent have input into IS decision-making, and only 10 percent have no IS responsibility.

—A.E. Alter

The CFO's New Agenda

WHAT CONCERNS ARE COMMANDING THE ATTENTION OF TODAY'S CFO?

Corporate restructuring	66.4%
Globalization of markets	57.4%
Needs of the CEO	51.1%
Complexity of financial markets	50.2%
Needs of the board of directors/ audit committee	42.4%
Responding to economic conditions	39.3%
Changes in accounting/regulations	37.1%
Responding to competition	27.1%
Takeover threats	18.3%
Other	1.3%

SOURCE: BUSINESS INTERNATIONAL CORP/ KPMG PEAT MARWICK

suited to be "the gatekeeper to business executives who have the need for the information.

"The issue," Maisel continued, "is who is best positioned to respond to the corporation's needs for quality information and broader sets of performance indicators." The CFO is well positioned to be the "facilitator and catalyst" within the organization, helping "management team members define what information is needed to effectively run the enterprise. . . . Much of the information required will be financially oriented and thus remain in the traditional domain of the CFO. Business results are still measured in dollar amounts."

What then does the CIO bring to the partnership? Essentially, his technical expertise. "How that is achieved, the use of technology as an enabler, is the province of the CIO," said Maisel. "CIOs should understand the business implications [of technology decisions], but their value to the organization is to help create a technology which will implement those strategies." And while he concedes that there can be companies where the CIO rather than the CFO gets to be the "gatekeeper," the CFO "categorically" must be involved in the pursuit of information.

In short, Maisel suggests, if CFOs are to play the role of pulse-taker and strategic adviser, they must also take responsibility for deciding what constitutes information in the first place. Under this job description, CFOs become not just financial controllers, but information controllers.

"If the CIO reports to the CFO, you'll probably have one hell of a financial information system, but I doubt you'll have a management information system."

–Robert Patrick

This leads to another question: If CFOs are to stay on top of the information needs of the company, shouldn't they control the means of creating and transmitting information? If the answer is yes, then the reasoning goes that CIOs and the IS department should once again report to the CFO.

This may not be a majority view among CFOs, but neither is it an uncommon one.

Grand Metropolitan's Lowes is one CFO who holds this position. He is not opposed to CIOs in practice. In fact, he'd like to create a CIO position for Grand Met's entire U.S. food sector, to help coordinate and solve IS issues throughout the group. "But I would have the CIO report to me."

Lowes in fact is one of those who thinks that if CFOs had been minding the store, the CIO role would never have evolved. As strategic aide to the CEO and "assistant business manager," CFOs are the right officials for the job of controlling corporate information, he argued. But CFOs shouldn't do so by being "the old bean-counter or keeping score on other people." Instead, CFOs can help the entire company by becoming a "full-service" information provider, "building an integrated information resource across the company."

But many CFOs have given up on keeping pace with information technology, according to Lowes. By not keeping "on top of all the information needs of the whole business," he said, "[they have allowed] the CIO position to come into being." CIOs have carved out a separate power base "by catering to operations and marketing management." This has ultimately been harmful, he added, because it has unleashed "separate databases and information flows within the company." And, he concluded, the rise of the independent CIO has hurt finance departments, whose needs have become a low priority for IS management.

But Lowes thinks CIOs are losing their grip on power. "As technology has evolved to distributed processing and PCs, it has allowed users to go around the information people again. Financial people have the opportunity to [regain control of IS] and standardize the information flow to the total business"—if they embrace and master technology, rather than shy away from it.

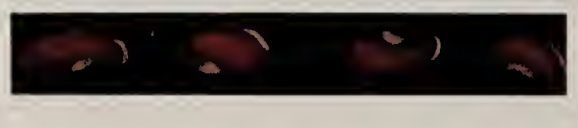
According to Steven A. Windell, partner and CFO at R.W. Beck and Associates, a Seattle-based engineering and consulting firm, CFOs should stand by the sides of their captains and, like *Star Trek*'s Mr. Spock, have at their fingertips all the information that is needed to make a decision. A CFO's value to the organization lies in how he or she "helps other functions in an organization understand data and information," said Windell.

But CFOs have failed to stay up to date on "how to give information," he said, because they're too intimidated by the complex and rapidly changing IS field. "That's why the new [CIO] position emerged—to leapfrog around that problem. CFOs probably created the CIO role to help develop answers for CEOs." CIOs then went on to create a political base for themselves by "helping other functions achieve their goals."



"I'm not saying get rid of the CIOs now. CIOs are a solution to a short-term problem. But in the long run, the 'chief information officer' concept is a dream to nowhere. There is no substance or foundation for this position."

–Al Pipkin



In the future, Windell predicted, the current CFO and CIO roles may both give way to a new position that is some kind of synthesis of the two. Al Pipkin, vice president of finance of Coors Brewing Co. in Golden, Colo., thinks that the 21st-century controller will become a chief intelligence officer. He believes that the CIO position will disappear completely as its functions are divided among finance, line management, and technologists or engineers.

Pipkin is becoming known in the accounting profession for his radical, computer-driven vision of its future. "Management accounting is becoming obsolete," he said. In the future, the entire work force will be trained to work with computers, and "the routine work treasurers and controllers do will be clearly automated." Much of accounting will become a "lights-out" function, he said. Computerized accounting systems will become the heart of what Pipkin calls a corporate "strategic database" that will include not just accounting information but planning and strategic knowledge as well. It will be the controller's job "to make sure the database is ready for analysis and that people are trained in techniques to use the data"—in other words, to be a chief intelligence officer.

"I'm not saying get rid of the CIOs now," he said. The accounting profession is not yet ready to tackle these challenges. CIOs are "a solution to a short-term problem." But in the long run, he wrote in the accounting industry journal *Management Accounting*, "the 'chief information officer' concept is a dream to nowhere. There is no substance or foundation for this position."

When Heidrick and Struggles' researchers asked CFOs which areas of expertise will become more important to them in the next five years, 39.5 percent said information systems will be one of them. In light of these opinions, this statistic raises many tantalizing questions:

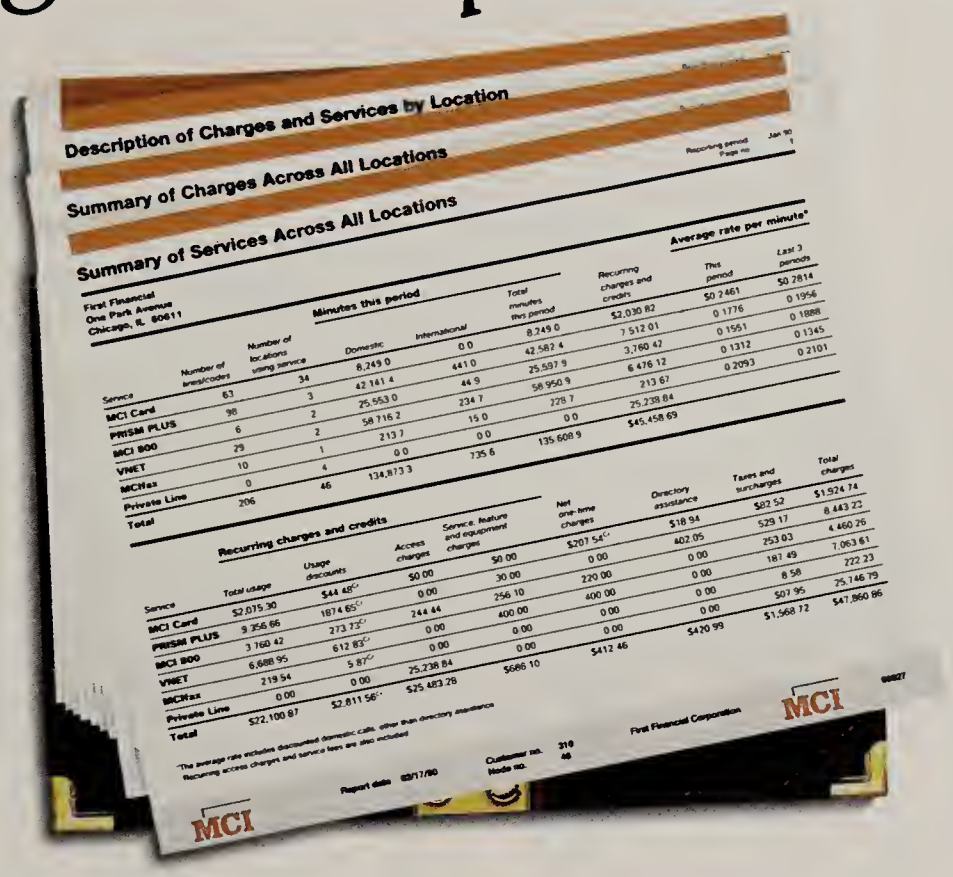
How many said this because they wish to retain or regain control of IS; how many because they want to forge an alliance with CIOs?

And why did over 60 percent of CFOs ignore this area? Is it because these CFOs take a narrow view of their own responsibilities? Is it because technology intimidates them? Or is it because they look to the CIO to be the source of computing expertise for their company?

When IS managers discuss the role of the CIO, they see a growing role for themselves in the creation of corporate strategy and organizational change.

But they will need to ask themselves these questions in order to judge whether the ambitions they share with CFOs will lead them to an alliance, or a collision. CIO

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Today's laptops are not only smaller and more powerful—they're well-connected team players to boot

MIGHTY MITES

BY PAUL KONSTADT

The insurance company engineer saw the boxes sitting in a corner of the client's storeroom, casually stacked against a wall. A quick check of his portable PC's data files showed that those innocuous-looking brown cases held chemicals classified as toxic by the EPA.

A store owner wanted an extra shipment of tennis balls quickly, to take advantage of an unexpected promotional opportunity. The salesman used his laptop PC to dial directly into his firm's mainframe. He was able to reserve production for that account and confirm the order and the delivery date in minutes, closing the sale on the spot.

A research scientist had developed a potentially valuable new process, but the company executive responsible for appraising the procedure was half a world away, at a scientific conference. Electronic mail brought the technical documentation to the executive's laptop and carried back his notes and comments. Days were whittled off the review cycle.

Portable computing has changed almost beyond recognition since the first "luggables" appeared on the scene seven years ago. The latest Compaq "notebook" computer is smaller than the detachable keyboard of the company's 1983 product. It is



JOE ALLRED: *It doesn't pay to use cheap technology.*

PHOTO BY RUSSELL INGRAM





BARD WHITE: *Portable computing's most far-reaching application at Spalding is by the sales force out in the field.*

also several times faster than the original 32-pound behemoth, and it can store almost 30 times as much data.

Truly portable IBM-compatible computers have evolved from an exotic curiosity to a business necessity, with more than 2 million machines shipped during the waning years of the 1980s and another 1.1 million expected to be sold this year, according to International Data Corp. of Framingham, Mass. That's a jump from a few thousand units per year (in the mid-80s) to more than 3,000 per day. Hardware spending totalled $2.3 billion in 1988—the last full-year tally released by Dataquest, the San Jose, Calif., market-research firm. Users with extensively customized applications report laying out about as much on software as on equipment.

People whose occupations generally kept them out of the office—roving journalists, field auditors and engineers, traveling salespeople, for example—were the first to use laptops. They used them individually, primarily for word processing, electronic mail and file keeping. But of late, some technologically aggressive companies have moved to either supplant or supplement their desktop PCs with portables, allowing generally office-bound employees to take work home or on business trips, and some have moved to automate whole functional areas or departments with customized software, processes and procedures designed specifically to exploit the power of laptops.

Some technologically aggressive companies have adapted business processes specifically to exploit the power of laptops.

"We virtually put everything we could think of on the computers . . . it's an enhancement that gives us the flexibility to schedule our time," said Jim Cook, data center manager at Pfizer Inc.'s animal health division in Lee's Summit, Mo. "Last night I was watching *Jesus of Nazareth* while designing the cabling system for our new IBM token-ring network."

Cook has bought individual Toshiba laptops for the division's research veterinarians, accountants, and sales and data-center staffs. Most of these people already had access to some

PHOTO BY JOHN KENNARD



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RAY PADRON *was an early champion of portable technology.*

PHOTO BY FRANK POOLE

sort of computing resource, Cook said, but the desktop options were often "cumbersome. . . . It was a matter of matching up the right hardware with the job."

To keep in touch, salespeople in the field use a public network from CompuServe Inc., based in Columbus, Ohio, for electronic mail and communication with the mainframe, while those who need a wider range of access to corporate mainframe files and applications can dial directly into the host computer's modem.

"[Portable computing] has enabled our staff to react quicker," Cook said. "I would say we have a certain amount of strategic advantage from that."

A different kind of field-staff automation has helped Aetna Life & Casualty Co. speed up the process of writing commercial insurance policies, according to Ray Padron, the Hartford, Conn., insurance firm's director of field operations engineering. Under Padron's guidance, Aetna

Going Places

Laptops today are not just mobile; they're well-connected.

For most laptop users, power at the fingertip is only the first part of a solution; without the ability to communicate with corporate mainframes and other computer users, the laptop is little better than a high-tech notebook. Standard telephone lines are the aboriginal communication choice and still the most widely used, but now radio and digital networking technologies offer virtually boundless options.

The latest in radio data communications is the ARDIS system, which went into service in early April. Derived from the in-house network developed by Motorola for IBM's field service operation, ARDIS's combination of radio transmitters and backbone land lines allows individual laptop users in the 400 largest metropolitan areas of the United States to send and receive data while just about anywhere at ground level or above—indoors or out, moving or stationary—using battery-powered equipment.

"We cover the bulk of the business activity in the United States—80 percent of the population—but some very small percentage of the geography," said Rob Euler, vice president of marketing for ARDIS, based in Lincolnshire, Ill. "We are not, for example, the answer for long-haul truckers" or others whose communications needs might take them away from population centers.

The nation's cellular telephone network offers a wider range for field communications service. The newest generation of car-mounted and hand-held phones can be had with jacks that allow a direct connection to a computer modem. Vendors also offer kits to update older models for computer or fax modem connections.

In addition, one of the major laptop vendors—GRiD Systems Corp. of Fremont, Calif.—recently began to sell a single 18-pound bundle that includes a top-of-the-line laptop already hooked up to a full-powered mobile cellular telephone. With fully charged batteries, users of this GRiD laptop can compute with 80386-type microprocessor speed on their networks while remaining free of tangible connections of any sort for up to 4.4 hours continuously, or 7 hours intermittently, according to the company. For people whose physical strength or computing needs might be more limited, GRiD also offers a 15-pound package with a simpler 80c86-based machine.

—P. Konstadt

has given each of its approximately 500 field engineers (who evaluate the risks involved in prospective accounts) laptops from GRiD Systems Corp. in Fremont, Calif. The laptops run Aetna-developed report-generating and database software designed to enable the engineers to put their observations of potential customers' operations into a standardized format quickly, then transmit those reports into the corporate database from the nearest available telephone or dedicated network connection point.

"Portable computing has enabled our staff to react quicker. I would say we have a certain amount of strategic advantage from that."

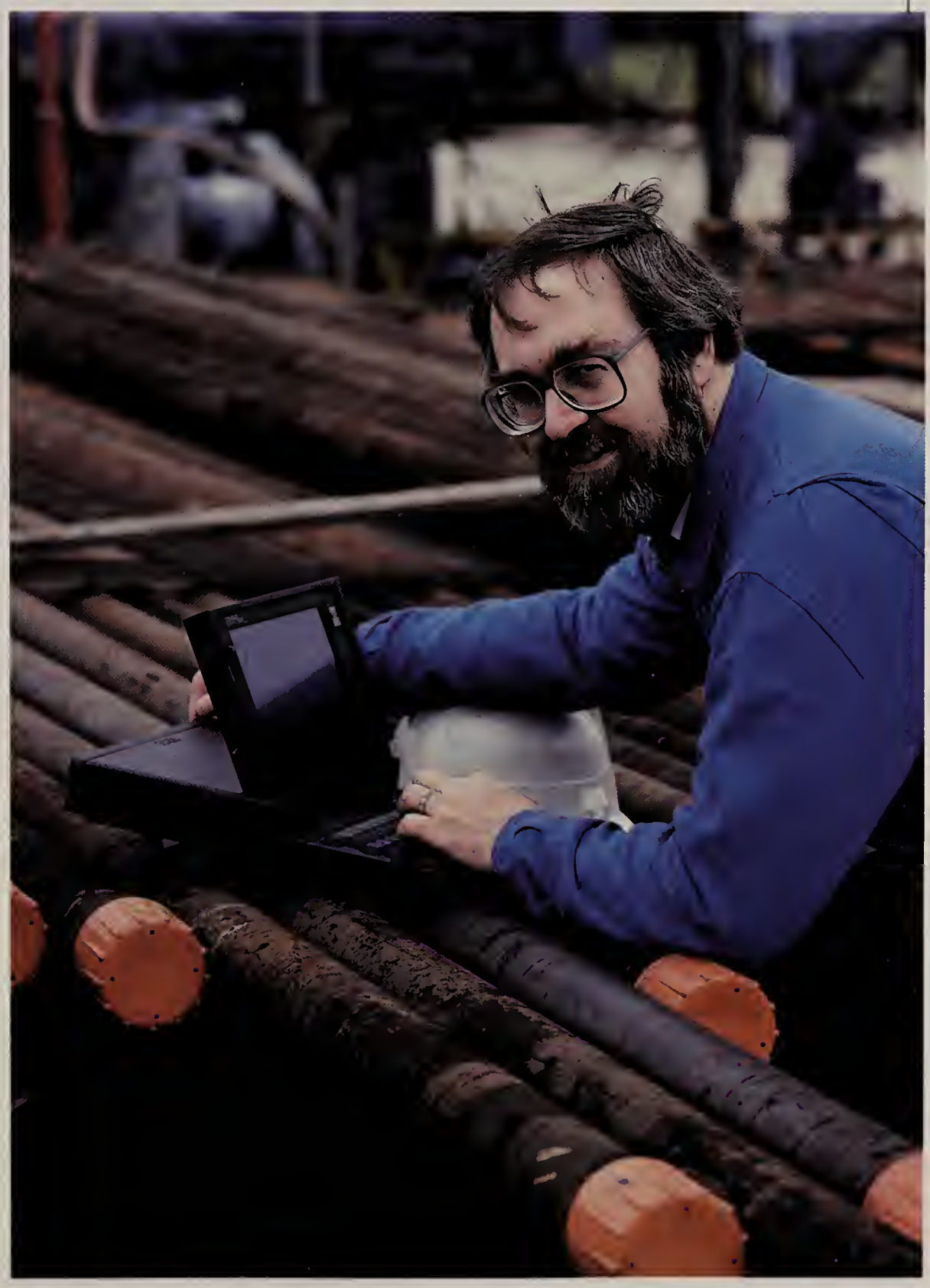
—James Cook

"One benefit for us is quicker turnaround time," said Padron. "We've been able to save four to 10 days, underwrite faster, avoid some risks, and provide faster service to our accounts." Aetna, he added, moved to adopt portable information technology relatively quickly, while its competitors "are still looking at ways to do this. It will take them some time to catch up."

Joe Allred doesn't think of his career as a research scientist in the context of a race with leaders and followers, but rather as part of the effort to "sell more wax"—the original product of his employer, S.C. Johnson Wax of Racine, Wis., a diversified consumer products manufacturer. In five short months, Allred's notebook-sized Compaq LTE/286 has come to play a central role in his part of the corporate undertaking, allowing him to keep track of expenses on a spreadsheet as they are incurred, draft letters and memos during otherwise free travel or hotel time, and use electronic mail to short-circuit sometimes endless games of telephone tag.

"I'm able to be more productive, so I'm simply better in my job," Allred said. "It becomes too expensive to use cheap technology. How can the company afford to allow me to do something inefficiently?"

Life before the laptop "was really a mess," he recalled. "I wrote notes by hand in little notebooks, then transcribed them into the computer when I returned home. I would be met with a mountain of accumulated mail. I would have to fight most immediate fires, and as I filed trip reports later and later, I would lose details. There was always a certain amount of stress from all the uncompleted work hanging over me."



LARRY FLOURNOY: *a vast improvement in drill-site computing*

PHOTO BY BOB WERRE

What Price Mobility?

Being able to work anywhere, anytime, has its downside

Joe Allred has been using a laptop on his business travels for the past six months, and he has become so dependent on its filing and communications powers that he believes it would hinder his career to go back to notebooks and telephone tag. But the Racine, Wis.-based S.C. Johnson Wax research scientist knows that he is paying a price for the advantage of greater efficiency: giving up a sense of privacy and well-being in his drive to work smarter and faster. "Sometimes you get to the point where you feel that everybody owns you but yourself," he lamented.



ALLRED: *trading privacy for efficiency*

Jim Cook, data center manager at Pfizer Inc.'s animal health unit in Lee's Summit, Mo., saw the downside potential when he gave laptops to scientists, salespeople, and accountants in his organization. "We try to discourage people from spending all their time working. There is a temptation to do that," he said.

Cook acknowledged that it sometimes seems that he is violating his own rule, lightly describing how his wife now and then sighs when she sees him come home with the telltale carrying case of his laptop. "It is a tough call," he conceded. "The stuff I do away from the office I would have to do anyway. What the laptop does is give me another tool to work with my schedule, to do things I would feel pressure to get done anyway."

Hard data is tough to come by, but one study published last year by two Carleton University researchers found that white-collar workers who make use of what the Canadians called an "electronic briefcase" work as much as four and a half hours a week more than those who don't.

The researchers—Linda Duxbury and Shirley Mills—looked specifically at couples who had children and were both working full-time. They found that there was little difference between the men and women in the average amount of extra time electronic-briefcase users put into their jobs, but there were significant differences in which activities were given up to make room for the extra work. Men, they found, spent less time in family roles—interacting with wives and children, doing chores and the like—while women, on the whole, gave up personal activities like rest, reading and exercise. That extra effort translated into more stress for them.

"[Women] aren't spending any more time at work [than men]," Duxbury said, "but they feel worse about it."

—Paul Konstadt

Examples of the benefits of Allred's laptop came readily to mind. One involved the early stages of a new project. Allred was called out of town in the days immediately prior to an important planning meeting. Under traditional circumstances, he would not have had access to critical planning documents in time to participate effectively in the session.

"What I needed was an outline of the memorandum [from the senior manager] that initiated the project. There was no way that I could see the pieces of paper, so I had his secretary simply convert it to an ASCII document [a standard form for electronically storing and transmitting words with a computer], then accessed that and downloaded it to my laptop [from the company mainframe]. I knew what his words were,

The electronic mail enabled by universal use of laptops allows for more effective orchestration of a widely dispersed work force, and some users say that it has evolved into a fundamental organizational tool for the corporation.

and even though I was a thousand miles away, we were able to work back and forth."

Communication has proven to be the driver for some companies' organizationwide automation efforts. The electronic mail enabled by universal use of laptops allows for more effective orchestration of a widely dispersed work force, and some users say that it has evolved into a fundamental organizational tool for the corporation.

"We found [E-mail] to be the most effective way of communicating, bar none," said Bard White, worldwide director of MIS for Spalding Sports Worldwide, a maker of sporting goods based in Chicopee, Mass. Across the corporation, Spalding employees carry "basic, '286-based" laptops from NEC and Compaq, White said, which gives them greater flexibility in their specific jobs (for instance, software engineers can make

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after-hours repairs from the field) and more effective use of the corporate E-mail network.

"We have eliminated an awful lot of paper and postal costs," he said, citing a test message they sent from Massachusetts to the United Kingdom, first as a single-sheet fax transmission, then as E-mail. The E-mail message cost about half as much as the total fax charge. "And E-mail is not garbled, misdirected or illegible," White added.

Direct mainframe database access promises salespeople faster order confirmation and shipping, and more accurate, immediate data on product inventory and availability.

Although electronic mail is the most widely used portable application at Spalding, sales-force automation is the most far-reaching. Direct mainframe database access promises salespeople faster order confirmation and shipping, and more accurate, immediate data on product inventory and availability. At the same time, pervasive use of IT in sales and order processing is giving managers and their staffs a clear, continuous picture of their performance.

"We used to run a whole lot of batch reports each month; now we've eliminated them and saved an unbelievable amount of computer time," White said. "These guys now have the reports several weeks earlier, and management of their territories has become much better."

Leading Vendors' Fastest, Lightest Offerings

COMPANY		MODEL	WEIGHT	STANDARD MEMORY
Compaq Computer Corp. Houston	Lightest	LTE LTE/286	6.2 lbs. incl. batt. 6.2 lbs. incl. batt.	640 kb 640 kb
	Fastest	SLT/286	14 lbs. incl. batt.	1 mb
Epson America Inc. Torrance, Calif.	Lightest	LT	12.6 lbs. incl. batt.	640 kb
	Fastest	LT-286e	17 lb. incl. batt.	1 mb
GRiD Systems Corp. Fremont, Calif.	Lightest	GRiDPAD	4.5 lbs. incl. batt.	1 mb
	Fastest	1450sx	11.2 lbs. incl. batt.	1 mb
NEC Technologies Inc. Wood Dale, Ill.	Lightest	UltraLite	4.4 lbs. incl. batt.	640 kb
	Fastest	ProSpeed 386	22.2 lbs. incl. batt.	2 mb
Sharp Electronics Corp. Mahwah, N.J.	Lightest	PC-6220	4.36 lbs. incl. batt.	1 mb
	Fastest	PC-8000	29 lbs. with color LCD mon., AC power only	2 mb
Tandy Corp. Ft. Worth, Texas	Lightest	1100FD	6.4 lbs. incl. batt.	640 kb
	Fastest	2800HD	12.5 lbs. incl. batt.	1 mb
Toshiba America Inc. Wayne, N.J.	Lightest	T1000SE	5.9 lbs. incl. batt.	1 mb
	Fastest	T5200	18.7 lbs., AC power only	2 mb
Zenith Data Systems Inc. Mt. Prospect, Ill.	Lightest	MinisPort	5.9 lbs. incl. batt.	1 mb
	Fastest	TurbosPort 386e	18 lbs. incl. batt.	2 mb

NOTES: All vendors offer some means to increase the memory and mass storage capacities of their machines. GRiD, a subsidiary of Tandy, also sells its laptops. Tandy dealers, however, do not sell GRiD machines.

While white-collar users have been learning to exploit laptops as extensions of their desks and offices, engineers and technicians have found them to bring tremendous power to shops and work sites. For example, JcAir Inc., a maker of aircraft test gear based in Industrial Airport, Kan., near Kansas City, found that by using laptops for the user interface of its collision avoidance system (TCAS) wiring tester, they could make their product available months sooner, giving airlines a head start on the installation of that newly required technology.

"If they didn't have a test set, then they'd have to do it wire by wire," said Rod Coday, program manager at JcAir. There are nearly 3,000 wires in the system, and Coday estimated that a technician would take as much as 17 hours to check them without some kind of automated system or the TCAS box itself, which had yet to be delivered. Since the airlines benefit by pre-wiring as many aircraft as possible, speeding the test box to market in advance of the TCAS deliveries guaranteed significantly greater demand for JcAir's testers.

Laptops are also bringing essential engineering work closer to the scene of construction, mining and drilling operations—activities historically hungry for computing power and long encumbered by the difficulty of adapting on the scene intricate blueprints originating from distant offices. For example, at drilling sites—where complex drill paths frequently move sideways as well as straight down—high-powered portable computers calculate three-dimensional maps of the target area, tracking the drill bits and the holes they leave and helping drillers decide

STANDARD MASS STORAGE	PROCESSOR	SPEED	LIST PRICE
3.5-inch, 1.44 mb diskette drive	80C86	9.54 mHz	$2,399
3.5-inch, 1.44 mb diskette drive	80C286	12 mHz	$3,899
20 mb hard disk and 3.5-inch, 1.44 mb diskette drives	80C286	12 mHz	$5,399
Two 3.5-inch, 720 kb diskette drives	NEC V-30	10 mHz	$1,699
3.5-inch, 1.44 mb diskette drive	80C286	12 mHz	$3,700
256 kb RAM card	80C86	10 mHz	$2,370
20 mb hard disk and 3.5-inch, 1.44 mb diskette drives	80386 SX	16 mHz	$4,995
1 mb silicon disk	NEC V-30	9.83 mHz	$2,499
40 mb hard disk and 3.5-inch, 1.44 mb diskette drives	80386	16 mHz	$6,599
20 mb hard disk drive	80C286	12 mHz	$3,500–$4,000
40 mb hard disk and 3.5-inch, 1.44 mb diskette drives	80386	20 mHz	$9,400
3.5-inch, 720 kb diskette drive	NEC V-20	8 mHz	$999
20 mb hard disk and 3.5-inch, 1.44 mb diskette drives	80C286	12 mHz	$3,499
3.5-inch, 1.44 mb diskette drive	80C86	9.54 mHz	$1,699
40 mb hard disk and 3.5-inch, 1.44 mb diskette drives	80386	20 mHz	$7,699
2-inch, 720 kb diskette and 360 kb silicon disk drives	80C88	8 mHz	$1,999
40 mb hard disk and 3.5-inch, 1.44 mb diskette drives	80386	20 mHz	$7,499

where to go next in their search for oil and gas.

"We milk every iota of computing power we can get from those machines," said Larry Flournoy, manager of technical software at the engineering firm of Eastman Christianson Co. in Houston. On-the-scene computing power is so important to drillers that, before the advent of portable micros, engineers like Flournoy would drag VAX minicomputers and gasoline-powered generators out to their oil and gas drilling platforms. The most powerful laptops now on the market are a vast improvement over that, Flournoy continued, but they have not entirely displaced their office-bound cousins, since "we just can't run [some applications] as fast [as the larger computers can]."

Public-safety agencies also hope to benefit from the ability to move computers closer to the action. Information technology has long played a supporting role in public safety, with vast databases of court and criminal records and sophisticated analytical tools accessible to specialists operating behind the scenes. But now, with the development of laptop computers and two-way radio systems specifically designed for data transmission, the same tools are becoming available on the front line as well, to police officers on patrol. A new system from Bull HN Information Systems Inc. of Billerica, Mass., using laptops made by its Zenith Data Systems subsidiary, provides officers with machines that will give them immediate, real-time, on-the-spot access to databases and state and regional crime-reporting services.

The first community to install the Bull system will be Howell Township, N.J. The central New Jersey community is waiting for Federal Communications Commission approval of its radio transmitter license—the last step before actual installation of the system can begin.

When completed this fall, the Howell Township system will allow officers to call up at any time photographic outlines of individuals and crime scenes, maps of unfamiliar neighborhoods, floor plans of public facilities, criminal and investigative files, and motor-vehicle records. It promises to give police "a monumental leap on the criminal community," said Larry Consalvos, the former Ft. Wayne, Ind., public-safety director who runs Bull's public-safety management systems efforts.

While white-collar users have been learning to exploit laptops as extensions of their desks and offices, engineers and technicians have found them to bring tremendous power to shops and work sites.

Consalvos acknowledged that despite the potential benefits of Bull's public-safety systems, selling them (particularly those with the most dramatic imaging capabilities) has proven hard. "The technology is there, but unfortunately, the budgetary dollars aren't."

As portable computers become smaller, lighter and more powerful and as communications technologies cut the hard-wire umbilical cords that tie users to their networks, the boundaries that once confined computing to offices and workshops are being eliminated. CIO

When their systems aren't integrated,

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to department

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A centralized IS structure unites Fleet/Norstar's many decentralized regional banks

E PLURIBUS UNUM

BY MEGHAN O'LEARY



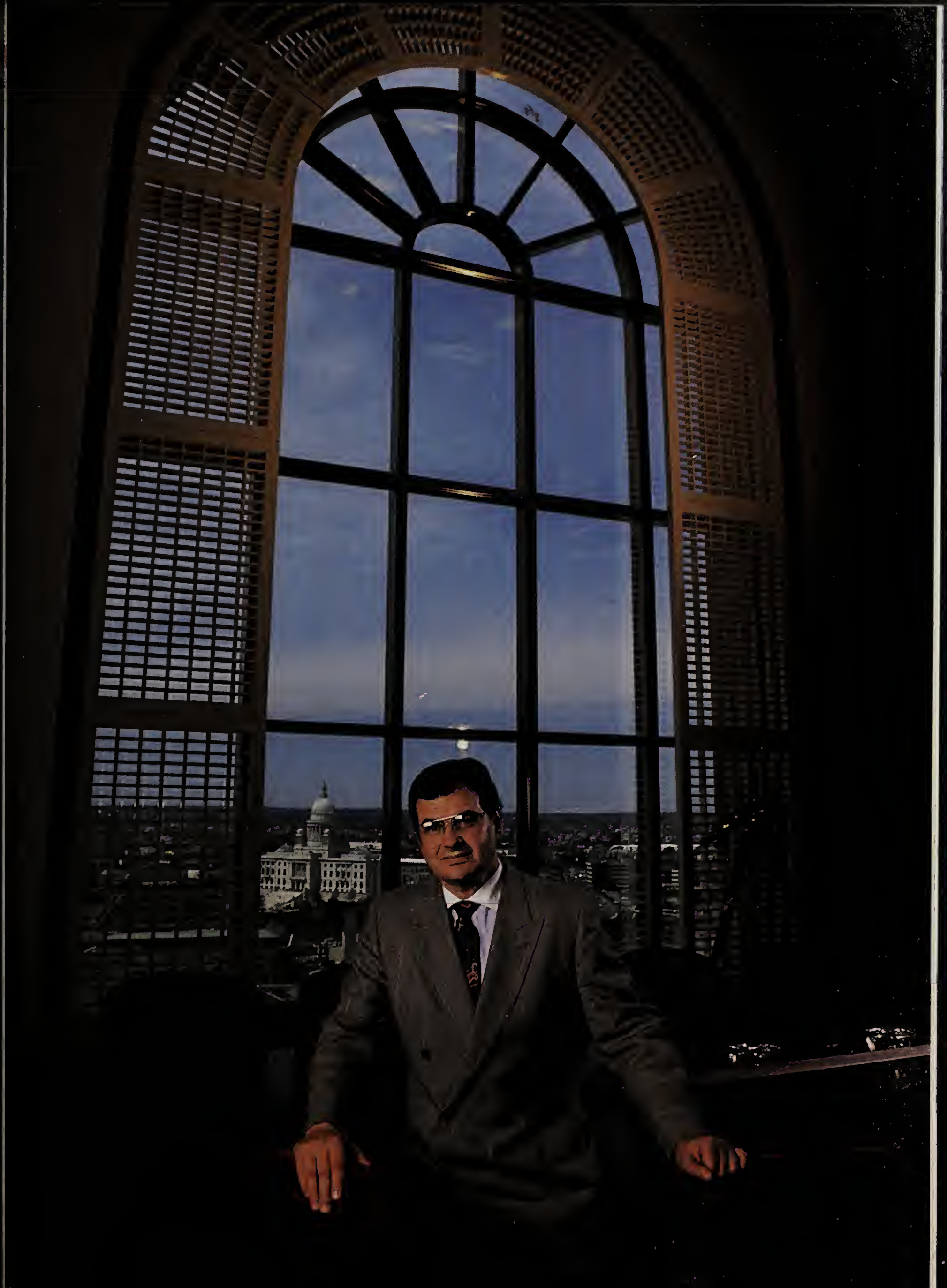
Fleet/Norstar Services Corp. is perhaps best described as an autocracy by committee. As the information services company of the Fleet/Norstar Financial Group, it has absolute responsibility for the success or failure of the centralized IS operations of a decidedly decentralized company. But it finds that personal interaction and cooperation work better than an iron fist to draw people together.

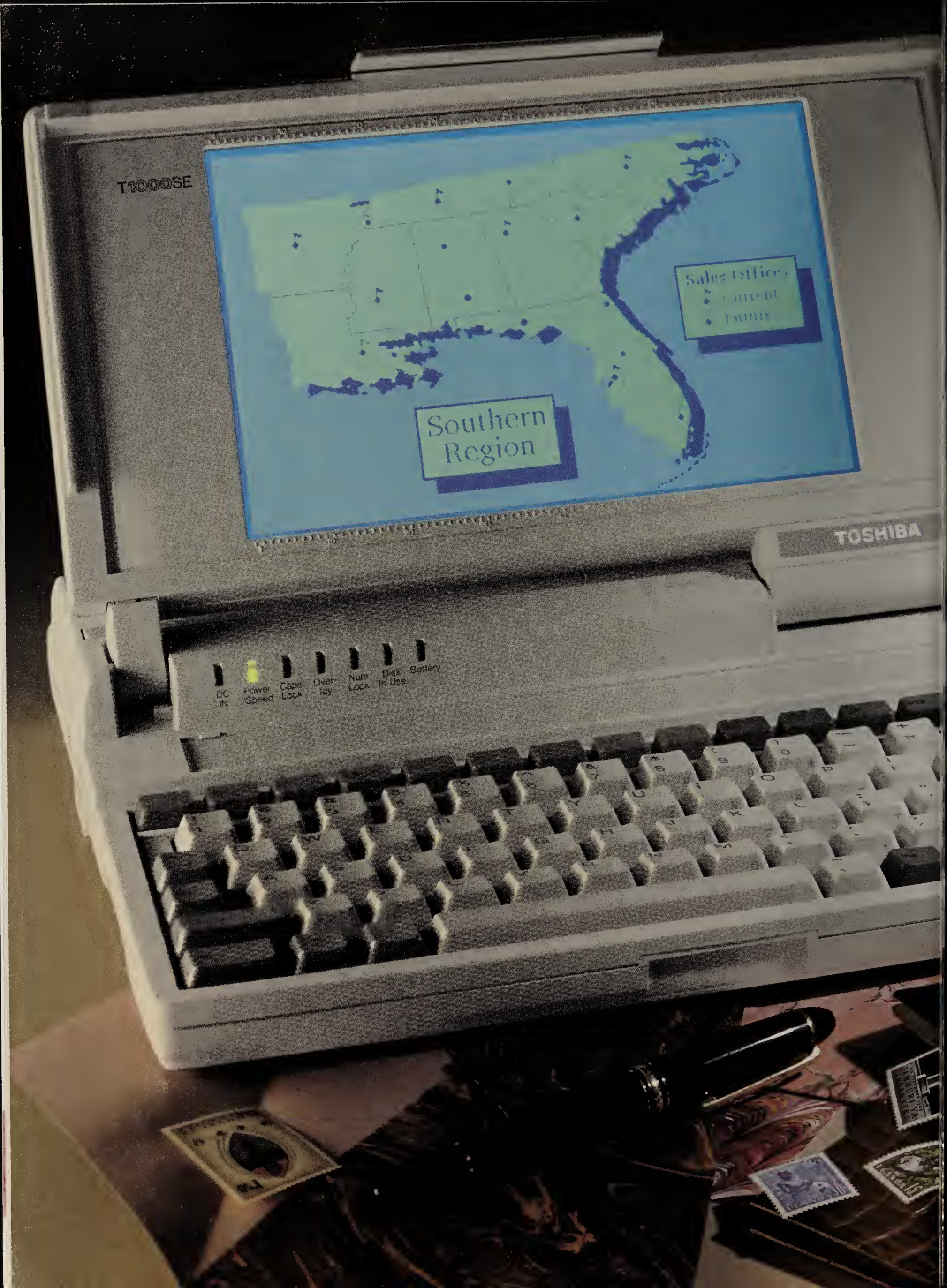
The Fleet/Norstar Financial Group Inc. is a $33 billion diversified financial-services organization based in Providence, R.I. Fleet/Norstar Services Corp. is responsible for IS for eight regional banks scattered across New England and New York, as well as for a variety of non-banking financial services companies across the country. In an industry that has grown increasingly competitive in terms of regional service levels and innovative products, Fleet/Norstar is remarkable for its determined push to consolidate and centralize IS and bank operations and to standardize applications across all banks. It is equally remarkable for a management organization that, despite the company's IS centralization, allows it to maintain close, personalized working relationships with each of the banks while improving its efficiency and sharpening its competitive edge.

At the head of this consolidation is Michael Zucchini, chairman and CEO of the services group and formerly its president. Zucchini joined the company in August 1987, shortly after the Providence-based Fleet Financial Group and Norstar Bancorp Inc. of New York announced their intention to merge, and within a few months had started a

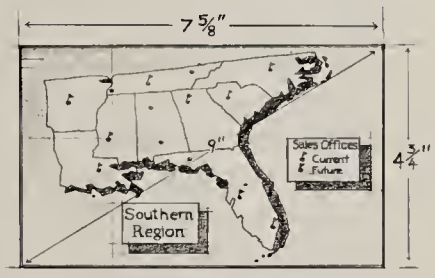
MICHAEL ZUCCHINI *presides over the centralized IS architecture of decentralized Fleet/Norstar Financial Group.*

PHOTOS BY GEORGE SIMIAN



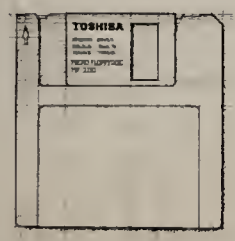

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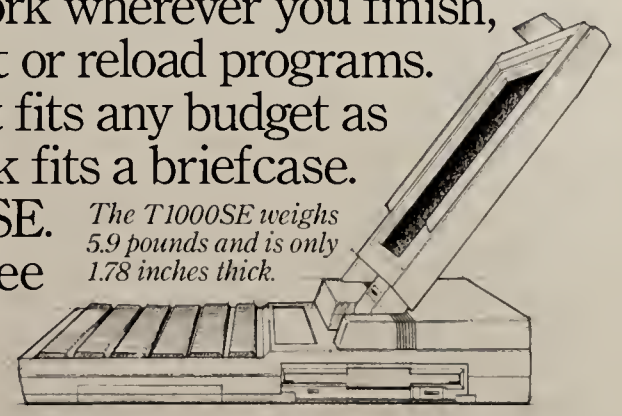


Ergonomically sculptured keyboard with a look and feel you're already familiar with.

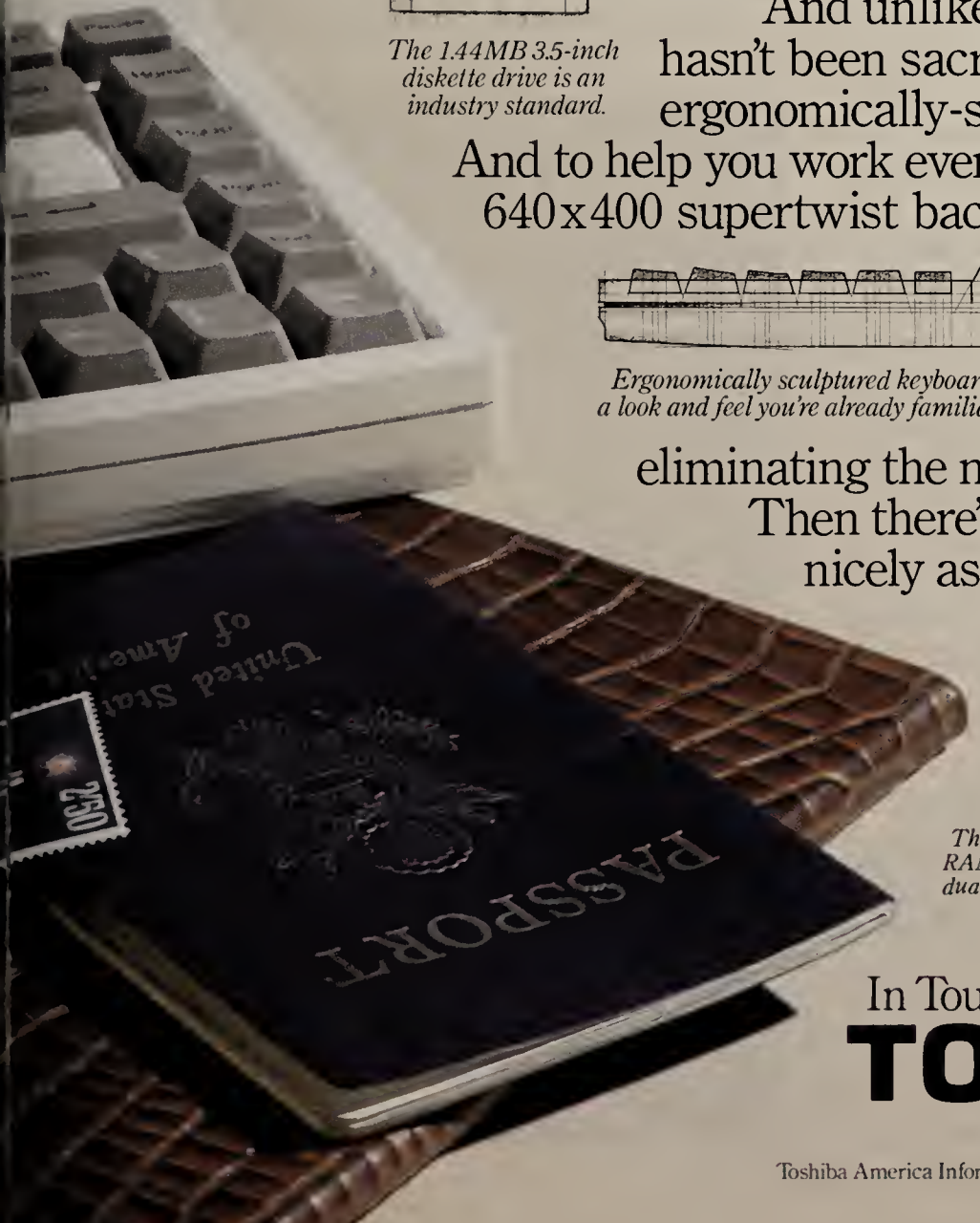
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Toshiba America Information Systems Inc., Computer Systems Division

drive to consolidate the data processing and bank operations functions of the two organizations into a single data center in Albany, N.Y. (Bank operations include such back-room activities as check processing, credit-card operations, loan processing and record keeping.) Zucchini's stated objective was to deliver $10 million in IS savings and to provide an environment through which the banks could introduce high-quality, innovative products and services quickly.

"I don't think that what I'm doing is a question of centralization versus decentralization, although those aspects are part of it," he said. "Our financial group has a non-banking organization, as well, and I did not try to commingle their activities into the single banking data center. But I felt that [because of] the homogeneous aspect of banking, it made a lot of sense to have a single organization."

To highlight the discretionary nature of Fleet/Norstar's IS consolidation, Zucchini pointed to the decision to move IS for Fleet/Norstar's two mortgage service companies to a separate data center in South Carolina. "That's decentralization," he said. "What I'm trying to do is to get the best of both worlds and to make the proper decisions for each of those businesses. The [non-banking organizations] are . . . different businesses, and I don't think one size fits all. I think it would be a mistake for someone to suggest that they would create a single data center to handle all of these different businesses."

The best of both worlds, in Fleet/Norstar's case, includes the benefits of having common systems: expense reduction, improved product quality and a wider array of products that can be developed in a shorter period of time; plus the flexibility to allow banks some autonomy to meet the needs of the communities they serve. "If you had eight data centers supporting those eight banks, you would not get the same full array of products, . . . and you would have less [consistent] quality than we produce today," Zucchini said.

Zucchini's responsibilities leave him pressed for time. As he speaks (which he does very quickly), he occasionally leaves off the last word of a sentence, as if impatient to get on to the next point. He is definitely no figurehead. He shifts easily from discussing strategic direction to filling in minute details—a man on intimate terms with his organization. He is a hands-on CIO, visiting each bank once a month, devoting up to five days a month to face-to-face progress meetings with bank presidents. He also visits each non-banking organization twice a year.

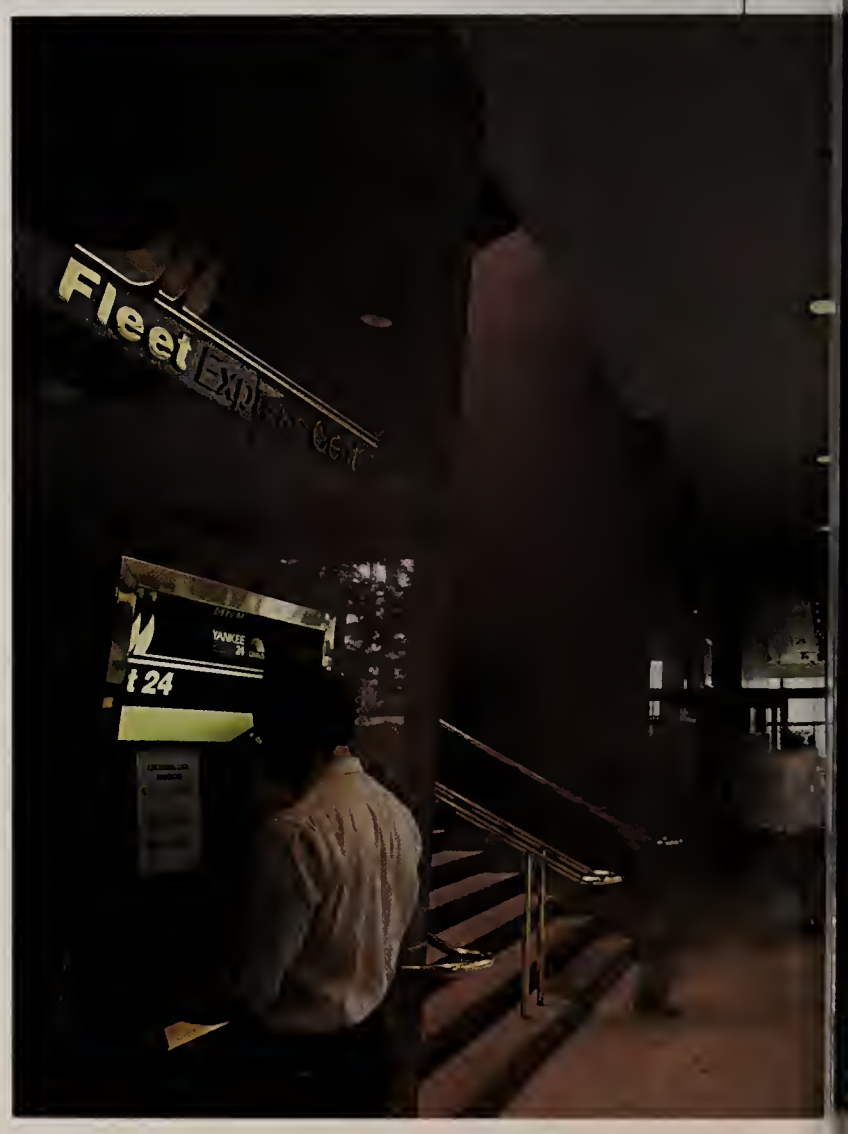
"What I'm trying to do is to get the best of both worlds and to make the proper decisions for each of [our] businesses."

–Michael Zucchini

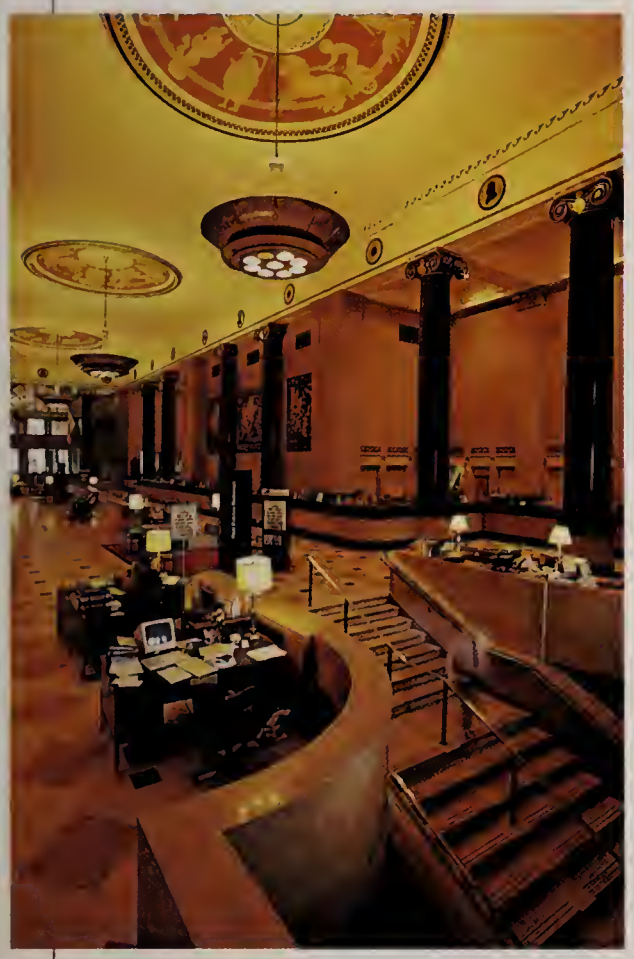
Apart from his role as CIO, Zucchini comes across as someone who gets things done. But even for Zucchini, getting started at Fleet/Norstar required more than just determination. Prior to the merger, Fleet and Norstar had been moving in markedly different directions. For 20 years, Fleet had followed the same strategy, concentrating on expanding its commercial banking franchises in the Northeast and expanding its non-banking activities nationwide. In its initial attempts at consolidating its Rhode Island, Connecticut and Maine holdings into a single bank in each state, the company had decided to let each bank keep its own data center and had focused on developing a common set of products to be used across all banks.

Meanwhile, Norstar had acquired 34 separate banks or groups of branches between 1972 and 1988. During this time, the company was too busy consolidating its holdings to a manageable number to focus on product development. At the time of the merger, Norstar had integrated its holdings into six commercial banks in New York State and one in Maine. Data processing was centralized, but more for reasons of quick consolidation than for standardization and development. Norstar's attempts at consolidation sometimes sacrificed products in the name of efficiency, according to Zucchini.

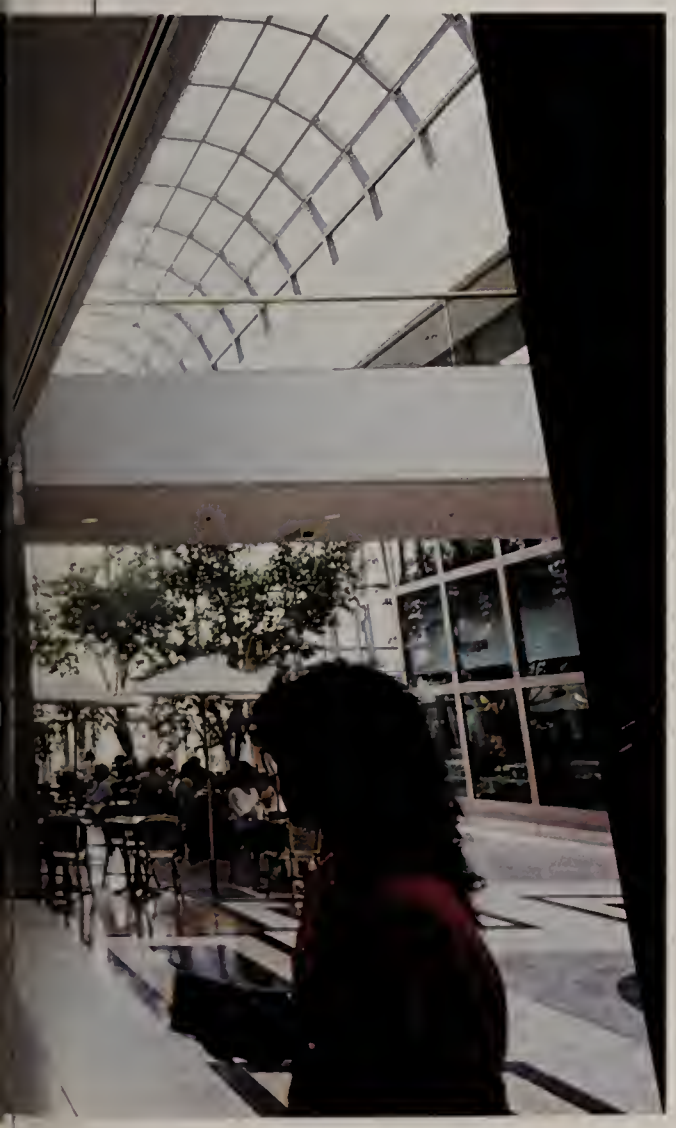
"If [an acquired] bank had teller automation, . . . they would rip it out because they didn't support such systems. So, in fact, when [Norstar] was done with this consolidation,



CENTRALIZED IS *product development has resulted in "more product availability than [the banks] have ever had before," said Zucchini.*



REMOVING IS *responsibility from individual banks frees bankers to concentrate on banking.*



they may have had less automation than when they started out, and they may have been somewhat more inefficient." The company had also begun to diversify in the mid-1980s, purchasing non-banking financial services firms.

In March 1987, Fleet & Norstar announced their intention to merge, and Fleet CEO J. Terrence Murray (Fleet/Norstar's current chairman) was appointed president of the newly formed company. Murray formed a matrix management organization, naming executives for New England banking, New York banking and financial services who presided over traditional vertical reporting structures. Murray also appointed executive vice presidents of commercial products and asset quality, consumer-banking, finance and administration, and technology. According to the tenets of matrix management, these executive vice presidents oversaw activities in banks across the whole company in a horizontal reporting structure. This meant that Zucchini was in charge of IS and operations for every bank. This organizational arrangement gave individual banks less autonomy but allowed Fleet/Norstar to be both highly integrated and diversified at the same time.

Zucchini joined the company five months later as executive vice president and CIO, with the heads of IS from the two merging organizations reporting to him. Though a CIO in title, Zucchini was not yet one in function. For the next six months, as the IS organizations from all the banks worked together to try come up with a way to consolidate their operations, Zucchini monitored their progress. This process yielded few results. Each bank approached the project from an entrenched technology base. Neither Fleet nor Norstar had ever had a full-fledged technology strategy, and the role of the CIO was not yet clear.

It was Murray's decision at a board meeting in January 1988 (the same month the merger was completed) that clarified the role of the CIO at Fleet/Norstar. As executives from Norstar discussed their progress in consolidating data centers, they assured the chairman that they were keeping Zucchini informed of their progress. The chairman's fateful response was, "I don't want him just informed; I want him to be responsible." That was a turning point in the project, according to Zucchini, who followed up that endorsement by outlining his idea to consolidate all IS and bank operations into a single services company.

In February, Zucchini proposed the formation of the Fleet/Norstar Services Corp., with himself as president and CEO, and Bob Drum (head of Norstar's IS group) and Dave Sheppard (president of Fleet Information) as executive vice presidents. The services group was to take matrix management to its logical conclusion, creating an independent entity for managing IS and bank operations across all the banks. The banks would no longer have separate IS staffs. They would become clients of the services company. Zucchini would oversee consolidation of the data centers and be held accountable for service to each of the banks. He proposed to save $10 million out of a $55.7 million budget by moving Fleet/Norstar to a single data center and a single set of applications. In March the board of directors approved the proposal.

Over the next eight months, the services group chose a location (Albany, N.Y), prepared to move processing to the new data center, and began to decide on a single set of applications.

In December 1988 Fleet/Norstar merged with Indian Head Bank of Nashua, N.H. Again, Zucchini proposed to save $4 million of a $7 million IS budget by consolidating processing for Indian Head's five banks with the Albany data center.

By March of this year, Fleet/Norstar had already reached target staffing levels companywide. By the third quarter, Zucchini estimates, the company will have replaced virtually every single computer system at each of the banks.

As part of the services company approach, all bank operations and data-processing expenses are charged back to the individual banks. This encourages the banks to find common solutions to problems and to use IS resources efficiently. They accomplish this through committees that report to the executive vice presidents in charge of the various bank functions.

For instance, the heads of consumer banking from each bank make up a committee that reports to the executive vice president of consumer banking. "When we want to deal with a consumer problem or a consumer system," Zucchini said, "we go to that committee. We can get a solution from that committee and not have to waste the time of going from bank to bank to bank to negotiate.

"If you want a new report, . . . you don't come and ask the IS group. You send your representative to that committee, and that person explains it to the committee members," Zucchini said. "Because if it's a great idea, why shouldn't [all the other banks] get the report as well? And you get a report that doesn't have to be modified several more times for the other banks. Also, if it's not a great idea, I much prefer that committee to tell that person than to have my staff do it."

Zucchini's hands-on management style also involves critiquing his own performance. Each morning he receives a report detailing service problems and downtime for every system for the previous 24 hours. Zucchini rates his performance in his monthly meetings with the senior staff at each bank.

"There's only one measurement—uptime; but it's an important measurement. When things go wrong, we have to explain what went wrong, and we have to try to deal with it. This has done a tremendous amount for my staff. . . . I've been able to get them to focus on the important areas."

Zucchini admits that this approach might not work in every organization. One obstacle, he said, might be the question of "who's willing to identify to another party everything they did wrong. But I feel it's the only way we could survive." If his consolidation plan fails, he ventured, "it will fail because the banks will feel that the services company doesn't care about them."

Zucchini downplays the issue of how much control the individual banks have over their own operations as a result of consolidation. "They actually have more control and more access to this function than they ever had when they ran it, because they pay more attention to it. If a problem occurs today—well, it's a big deal.



ZUCCHINI: *In a system-intensive business, the only truly important measurement of IS performance is up time.*



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THE APPROACH *to IS has spawned global thinking.*

Whereas, if it was a problem that existed within the bank [before centralized IS], the president of that bank might not be as vocal about bringing it to senior management's attention because, quite frankly, the president of the bank was responsible for running it.

"If a problem occurs today in the services company, they feel very free to say, 'You have a problem,' and I like that idea, because it has taken every problem and [given it] the broadest possible exposure."

By taking IS and operations responsibility off the bank presidents' hands, Fleet/Norstar allows them to concentrate on the responsibilities of running a successful bank. The resulting centralized product development means that the bank presidents today have "more product availability than they've ever had before," Zucchini said. "And they certainly have the control over many of the variables that are important in their community, like interest rates and service charges."

The next phase in Fleet/Norstar's IS plan is to introduce a barrage of new, competitive products once all software has been standardized. "What we've done has allowed us to develop products faster than ever before and to make them available to [the banks]," Zucchini said.

"The fact of the matter is, we have a centralized product group which does a fabulous job because they're able to consolidate all their resources into one place."

This results in lower production costs, according to Zucchini, "and we can develop [products] on the computer system in one place without having the reiterative effort of developing them at separate data centers. We can spend more time and effort in putting more procedures in place and making sure [they work] correctly."

In addition, the individual banks are getting a level of IS and operations support that they never could have afforded on their own, he said. "What we're doing makes the job of the bank presidents easier. It gives them a better array of products. It gives them better quality and, at the same time, reduces our expenses and increases profitability." Fleet/Norstar expects these advantages to translate into a competitive edge for the banks.

Now that Fleet/Norstar's IS consolidation is almost complete, Zucchini has begun to reconsider his role as CIO. At the time he proposed the Fleet/Norstar Services Corp., he had intended to act as its president for 18 months and then return to his strategic role in the corporation. There seemed to be some question at the time, however, as to what that role was.

Zucchini is now CEO and chairman of the services company. Bob Drum and Dave Sheppard have jointly taken over the office of president. While Zucchini believes that the ongoing flurry of activity over the final software conversions will prevent the services group from working on a long-term IS view for now, he expects to be able to broaden his focus as Drum and Sheppard gradually take over the day-to-day activities he has overseen for the past three years.

For now, Zucchini expects to keep busy mapping out a strategy for the company's non-banking businesses, "to make sure that they're making the best possible use of technology." In the longer term, he believes that determining the corporate direction is one of his primary roles.

Technology can spark new ideas and dynamics in his industry as easily as it can fill needs, Zucchini said. "One of the things I think happens very frequently is that information technology is a kind of a groundbreaker. When you begin to [apply] it, you change how people interact." In Fleet/Norstar's case, a centralized approach to IS has pushed people to take a more common approach to business, to begin acting as members of a larger whole.

"We have tried to show them [that] technology is not just a response to something that someone else thought of," Zucchini said. "In fact, it has helped cultivate different ideas and can lead them in new directions.

"What's the difference, when you buy a bank—or three or four banks—unless you really add some value to that process?" CIO

TECHNICAL PROFILE

Fleet/Norstar Services Corp. is the information services subsidiary of Fleet/Norstar Financial Group Inc., a $33 billion diversified, national financial services company with dual headquarters in Albany, N.Y. and Providence, R.I. Fleet/Norstar processes its bank-related IS services from a single data center in Albany, N.Y., where an IBM 3090 600s mainframe supports the company's eight regional banks.

Its seven bank operations centers—three in New York State, and one each in Connecticut, Rhode Island, New Hampshire and Maine—process checks for all the banks on IBM 3890 check processors. A T1 communications network running from California to the East Coast connects these centers with all of the major bank hubs as well as non-banking businesses.

While Fleet/Norstar has not yet standardized most of the individual bank hardware, the company has recently chosen NCR platform automation systems for its customer service representatives. The Fleet banks have about 310 ATMs between them.

Hardware at Fleet/Norstar's 12 diverse non-banking businesses is not standardized. Officials at Fleet/Norstar chose to identify only those bank and non-bank systems that have already been standardized.



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ISDN Grows Up

The oft-anticipated telecom marvel has matured from 'promising future solution' to 'moderately useful present-day option.' Stay tuned . . .

BY BYRON BELITSOS

The early experimental phase of ISDN implementation has now come to a close. With nearly 100,000 lines of ISDN now in commercial use, ISDN can be said to be an entrenched player in the telecom arena—and a force to be reckoned with for CIOs deliberating about network strategies in the 1990s.

Some whole-scale adoptions have resulted from the early trials, most notably by 3M Co. (a Centrex/ISDN configuration), and Intel Corp. (a PBX-based design). Aside from such enterprisewide conversions, scores of organizations across all industry sectors have built or are testing strategic applications.

Another evidence of ISDN's flowering is the New York State ISDN trial, announced in early April. Of the scores of trials that have been mounted since 1986, this one is impressive for two reasons.



First, it involves some of the leading users in the state, names like Merrill Lynch, Eastman Kodak, PaineWebber, Shearson Lehman, and Young & Rubicam. And second, it is sponsored and organized by New York's Public Service Commission (PSC), and thus marks the recognition by at least one state government of the long-term economic impact of ISDN.

For any firm that is serious about using communications for a strategic advantage, trends like these should put ISDN near the top of the planning agenda. If your organization is one of these, mid-1990 is a late date to be studying ISDN options—though not too late. It will take a decade to exhaust the competitive opportunities in customer service, sales and marketing, and operations that can be built around ISDN.

The building block for ISDN's many advantages is the three-channel capability of a "basic-rate interface" (BRI) line. Based on ubiquitous twisted-pair wiring, ISDN's basic-rate configuration provides three separate digital channels—each one functionally versatile—that amount to an aggregate total of 144 Kbps of bandwidth.

Yet, a single BRI line costs little more than an analog telephone line that provides only a single channel. With a conventional telephone line, users can get at best a single circuit-switched 19.2 Kbps channel (using an expensive modem), or, alternately, one voice line.

One basic rate line provides two 64 Kbps B channels and one 16 Kbps D signaling channel (or, 2B + D)—three circuits that can be used simultaneously for voice and/or data, in a circuit-switched and/or packet-switched mode.

ISDN software in central office switches allows services provided over these channels to be functionally integrated, (thus the appellation "integrated services digital network"). As a result, users can develop applications that utilize all three channels in a wide variety of creative combinations.

Much of this flexibility and integratability results from ISDN's software-based signaling protocol, known as Q.931, that is delivered via the D channel.

Q.931 also allows flexibility of an even higher order in ISDN primary-rate lines (PRIs), the ISDN standard that combines 23 B channels and a 64

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Kbps D channel. Using the protocol, customers can dynamically assign specific B channels to a multitude of services at any given moment. For example, a group of channels could be aggregated for a video teleconference and later turned back to 800-number or WATS service.

To illustrate the versatility of a BRI line, one vendor counted a total of 29 permutations of the five basic service capabilities (known as "bearer services") of an ISDN line. The five basic service types, each of which is defined in ISDN standards, are circuit-switched digital voice; circuit-switched data; low-speed packet-switched data; high-speed packet-switched data; and circuit-switched alternate voice/data.

These tongue-twisting options are available in some form today but must be ordered separately from widely disparate sources. The vendors might include your local telco for Centrex; your long-distance carrier for high-speed circuit-switched data; your modem provider for dial-up, low-speed circuit-switched data; and a public packet-switched value-added network (VAN) carrier such as Tymnet for higher-speed data communications.

ISDN makes this repertoire of options available over a standard interface to the public network—meaning that any and all ISDN-capable devices can plug into it. And because ISDN provides integrated access to the network, (through the Q.931 protocol that governs the user-to-network dialogue), users can mix and match any of these services at the desktop.

But this is just the beginning of the story: ISDN development has so far been driven by telephone companies and switch vendors. But these organizations aren't specialists in application software development; they're communications hardware manufacturers and installers—builders of the network infrastructure.

ISDN's real action will come when the vendors and independent software developers harness the flexibility and versatility of ISDN protocols like Q.931. This development activity will lead to the emergence of ISDN application software platforms in at least three environments: central office switches, host computer-to-PBX (or central office) interfaces, and personal computers and LANs.

ISDN central office software has grown out of Centrex and is the most mature of the three; some of this software is written by telcos and switch vendors, but many third parties are also involved.

Host-to-PBX or central office switch interface software uses a host, rather than the switch, as the controlling platform for voice/data applications. PC software vendors are also developing desktop ISDN applications for such vertical markets as law, real estate, retail marketing and banking.

Of course, there are numerous network applications where using existing technology will be more effective than ISDN. ISDN should never be seen as more than an important communications option, one among many competing alternatives. Companies for whom ISDN is a low priority include those with a requirement for greater than 64 Kbps to most desktops and/or a heavy investment in LANs; firms with an installed base of bypass technologies like VSATs and private microwave; and companies whose IS culture is opposed to voice/data management integration.

On the other hand, there are many firms that unequivocally must consider ISDN. These are customers that are dependent on publicly available network services: users of Centrex or of virtual private networks; big users of public data networks (VANs); organizations that make heavy use of dial-up in their data applications; multinational firms with major overseas communication needs; and companies that need to easily and economically expand and contract operations.

For multinational firms with major overseas communication needs, ISDN is a serious issue. Outside the U.S., where LANS are far less popular, ISDN represents a real improvement over existing voice and data services. In many countries, ISDN will be the only method of transferring data.

Most countries are mandating nationwide implementation of ISDN, but in the United States things may be more complicated due to the breakup of AT&T.

One of the frustrations early adopters are facing is the phenomenon of "ISDN islands." Currently, ISDN is only available at selected central office switches throughout the country; each Bell operating company (BOC) converts its central offices at different rates, and there are still many to go. Also, testing for ISDN connectivity between BOC and inter-exchange carrier switches

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(long-distance ISDN) is just getting underway. For example, Tenneco Gas in Dallas can't extend its ISDN network to its remote sites until ISDN gets deployed in rural America, which may take some years.

Problems like these have caused some large users to put off consideration of ISDN, leading them to become more committed to their own plans to build private networks. However, it is a myth that such companies can fully ignore ISDN. At a minimum, in order to interconnect with the public network, most private networks will have to implement some ISDN standards. And strange as it may sound, many companies in the next few years will be quietly migrating their private networks to the ISDN interface standards—since only ISDN provides a global solution for connectivity to multiple devices (including switches) and services. Still other organizations will build hybrid private/public ISDN architectures.

Large firms with very high bandwidth requirements should watch for the evolution of broadband ISDN. B-ISDN, still years away from deployment, will operate at speeds beginning at 50 megabits per second and is well-suited to the emerging era of high-bandwidth, fiber optics-based communications. B-ISDN standards are maturing and are being designed to interoperate with "narrow-band ISDN" networks.

Much of the misunderstanding of ISDN's potential has resulted from the fact that many trial users have heretofore used it to run existing applications in more cost-effective ways.

Such operational improvements provided will include the elimination of modems and expensive coaxial cable; replacing leased lines at 4.8 or 9.6 Kbps with switched ISDN lines running a 64 Kbps; interconnection of remote LANs; and far easier and cheaper moves and changes of terminal equipment. In addition, ISDN's passive bus configuration cuts costs by allowing users to combine up to eight data terminals on a single ISDN basic-rate interface line.

There are many firms that unequivocally must consider ISDN: users of Centrex or virtual private networks; big users of public data networks; organizations that make heavy use of dial-up in their data applications; multinational firms with major overseas communications needs; and companies that need to easily and economically expand and contract operations.

These benefits alone can cost-justify ISDN, but the competitive edge will belong to those who come up with innovative applications that change the way their organizations do business.

Initially, the most important of these will be customer-service applications, followed by applications for sales and marketing. Most customer-service applications will derive from the signaling capability of Q.931 that allows the delivery of the phone number of the calling party—along with stored files related to the calling party—before answering. A myriad of useful applications can be used to enhance this capability; one example is security. An airline can use incoming calling-line information to trigger an application that identifies callers who are attempting to make multiple reservations.

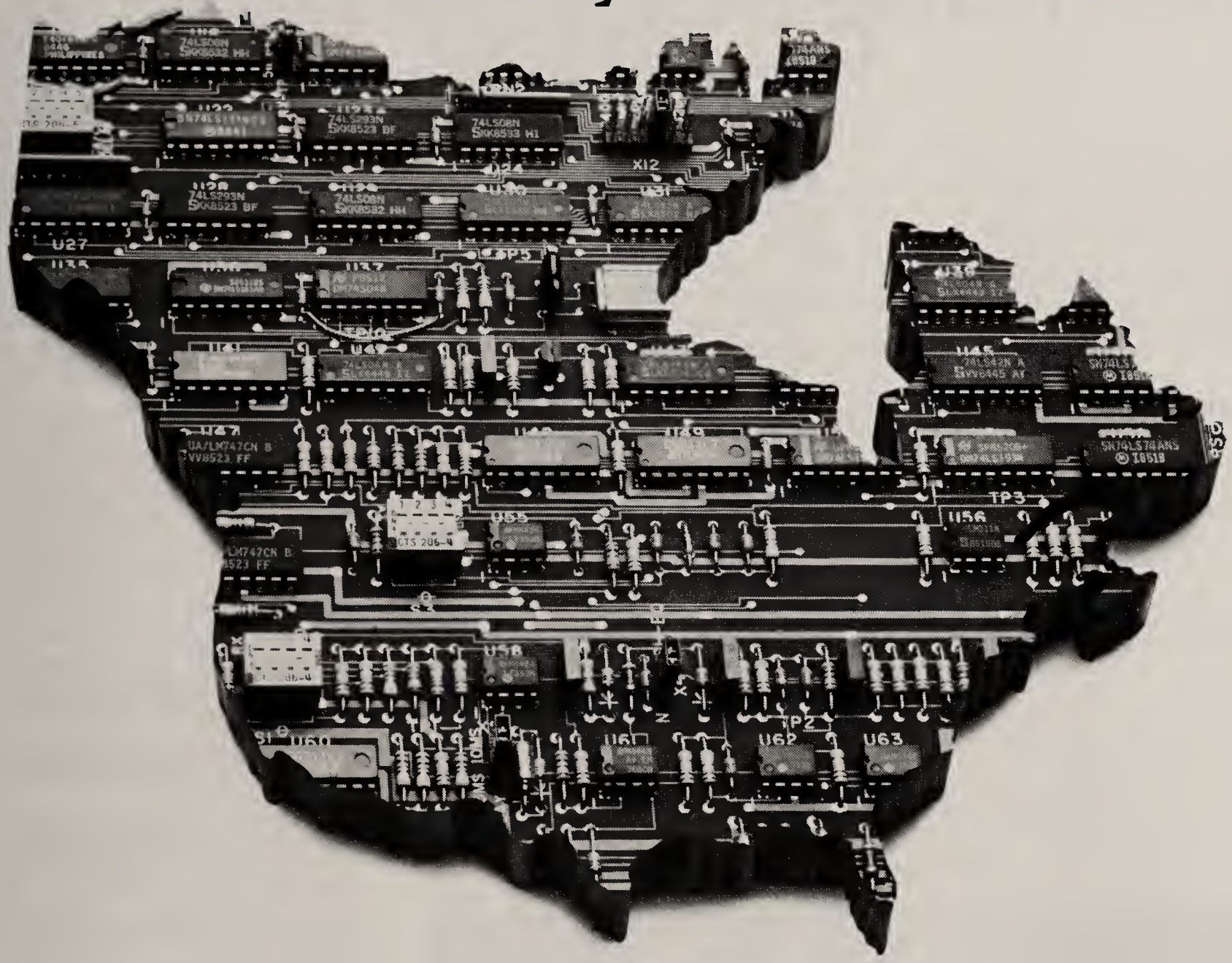
As ISDN becomes more popular, sales and marketing applications will be legion. Salespeople will use ISDN for screen sharing: sending alternative designs, proposals or product specifications to a potential buyer's screen over one B channel while simultaneously talking to the buyer on the voice line over the second B channel.

The real nexus of application development is the North American ISDN Users' Forum (NIU), an organization that most CIOs should be watching. The Forum consists of two subgroups: the ISDN Users' Workshop and the ISDN Implementors Workshop. At Forum meetings, ISDN users present their application requests to ISDN implementors, who then work to develop "implementation agreements" and "application profiles" that are submitted for discussion and approval by the Users' Workshop. At the most recent meeting of the NIU, there was an atmosphere of tension as some members complained that the process of arriving at implementation agreements was taking too long. The controversy is indicative of the atmosphere of keen anticipation surrounding the rollout of ISDN applications. At the NIU's most recent meeting in March, several dozen applications were adopted, and a booklet containing these application agreements will soon be published and available.

With the architectural and application issues it raises, planning for ISDN today is critical. CIOs will need to deal with issues as mundane as cabling, and make decisions as critical as what standard to build a private network around. One thing is certain: ISDN is one of the most important planning issues CIOs will face in the next few years. CIO

Byron Belitsos is president of Telematics Research, a San Francisco-based research and consulting firm that specializes in strategic planning for telecommunications. He is co-author of Business Telematics *(Dow Jones-Irwin, Homewood, Ill., 1986).*

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Breaking Down Barriers

CIOs should put IT to work creating new pathways for effective collaboration

BY JACK A. HAMILTON

Everything a CIO does should be aimed at enhancing the organization's relationships with the wide range of people who have a stake in its health, rather than at just supporting internal business functions.

Viewing the situation this way changes the CIO's role from operating an information utility to helping the corporation move toward business solutions that increase information sharing and collaboration among all parties involved.

Information technology adds value to a corporation by changing relationships with customers, investors, management and employees, as well as with suppliers, regulatory bodies, community groups and even competitors. Conversely, corporate turf-guarding limits economic opportunity. And CEOs are beginning to recognize that a cooperative environment encourages people to become more effective at their work, and thus helps their companies keep pace in a global economy.

For this reason, fostering information exchange and a non-competitive atmosphere is gaining ground in the executive suite. Indeed, some of the greatest advances in business have been achieved by people who have been able to integrate diverse information to arrive at a solution.

Many senior executives still believe in hierarchical organizations. They think that multiple layers of middle management are necessary and that all things, including information technology, can be departmentalized. CIOs cannot avoid the challenge of communicating to their top management the fact that the current functional specialization and segmentation in organizations simply cannot support information sharing.

A new mind set is needed. Departmental barriers must be replaced by a more cooperative workplace, fostering conversations that promote higher productivity and achievement. According to Alfie Kohn, author of *No Contest: The Case Against Competition,* "Competition [within the organization] doesn't allow that kind of exchange. If you are my rival, it would be irrational for me to share information with you because your success comes at the expense of my own failure."

Some new concepts can help CIOs to communicate this very different way of thinking and acting as "one" company. They are called "organizing principles" and "corporate imperatives."



ILLUSTRATION BY BOB HAMBLY

A corporation's organizing principle is the cohesive force that balances the claims of all the corporation's stakeholders for the good of the company as a whole, according to David R. Vincent in his

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book *The Information-Based Corporation*. Many American companies still don't understand that their survival hinges on being able to withstand worldwide competitive pressure. Focusing on a company's organizing principle to guide its stakeholder relationships is key to maintaining the company's competitiveness in a global economy.

Expressing a corporation's organizing principle succinctly and clearly is the job of the CEO. The primary responsibility for identifying new strategies that will support the organizing principle and promote mutual benefit among all the stakeholders also belongs to the CEO. To help the CEO make these changes, the CIO must learn to converse with business managers about the stakeholder relationships that compose a business and about potential ways that IT can enhance these relationships.

The trick to a CIO learning how to promote internal partnerships with business managers may be to balance the CIO's instinctive sense of self-reliance with an ability to engage in dialogue. It means becoming adept at asking such questions as: "What can I do to break down a barrier? What can I do to work more cooperatively with other departments to enhance a relationship with a customer, a distributor, or a supplier?" It means giving up old conversations where the CIO might say: "I can't do that . . . it's not in my budget . . . it's not within my technical capabilities . . . it's just not possible."

Information-sharing promoted by Hari Notowidigdo, CIO at Wendy's fast-food empire, produced improved cash flow for Wendy's investors and expanded distribution opportunities for one of its technology suppliers. It started with some new conversations Notowidigdo had with two of Wendy's stakeholders—the managers of their company-owned stores and IBM.

Notowidigdo discovered that Wendy's store managers were looking for ways to better manage their businesses, reduce required labor, and help their key employees to provide customers with increased quality and service. At the same time, he learned that IBM was searching for

Fostering information exchange and a non-competitive atmosphere is gaining ground in the executive suite.

innovative ways to market its point-of-sale hardware. The result was a joint product-development venture between Wendy's and IBM, which led to IBM creating a portable entry terminal (PET) and to Wendy's IS department developing the supporting store systems.

Implementing the technology from this collaborative venture in Wendy's technology store (a live test store) has created a better and more efficient working environment. It has enabled employees to improve the consistency, speed and quality of their performance. Full companywide implementation is planned to take place over the next two years.

Better information flow didn't stop simply with the creation and deployment of the new technology, however. Wendy's operates a help desk for its stores to solve equipment failure and software problems. This is augmented by an agreement with IBM for maintaining the IBM equipment. When local maintenance service is needed, the help-desk staff dispatch local IBM service personnel. This maintenance agreement between Wendy's and IBM has been very successful, resulting in a substantial reduction in store-systems maintenance costs.

According to author Vincent, a company's organizing principle provides the foundation for its corporate imperatives: those few key business actions that are essential to the success of the business. The CEO has the critical responsibility of identifying the corporation's imperatives and communicating them to management throughout the organization. Organizations tend to drift when their leaders don't keep their imperatives clear and visible at all times. When implemented across the corporation, these imperatives focus all management and employee actions on the success of the company.

A corporation's overall imperatives must be translated into more specific business-unit mandates that focus on relationships that the business units have with particular stakeholders. Taken together, the business-unit imperatives must be accomplished in a balanced way so that the needs of each and every corporate stakeholder are met.

The organizing-principle and corporate-imperative concepts provide a unified focus for internal corporate functions and their relationships with external stakeholders. Within these relationships, these concepts help illuminate the points of leverage at which applying the right information technology can improve corporate performance. As noted in the Wendy's example, Wendy's investors received a higher rate of return when the store systems developed jointly by IBM and Wendy's IS staff made it possible for employees to work more effectively.

Increasingly CEOs are asking their CIOs two key questions: How well has the CIO helped to focus the energies of the various business units on satisfying corporate imperatives? And how well has the CIO facilitated the development of the functional executives into well-rounded, broadly educated, information-oriented team players?

The power available to CEOs stems from a new set of ethics that focuses on enhancing relationships with all the company's stakeholders and on teamwork through cooperation and information exchange. Companies that cannot develop collaborative approaches will not survive, because they cannot be as powerful in the newly forming world of global competition. More and more, that power is dependent upon the CIO's ability to help senior executives align their internal functions to meet stakeholder expectations. CIO

Jack A. Hamilton is the vice president of The Information Group Inc., a management consulting and education company in Santa Clara, Calif.

OFF THE SHELF

WHY EMPLOYEES DON'T DO WHAT THEY'RE SUPPOSED TO DO
And What to Do About It
By Ferdinand F. Fournies
Liberty House/TAB BOOKS Inc.
(Blue Ridge Summit, Pa.), 1988
107 pages, $14.95



The playful tone of Mr. Fournies' book belies the depth of his research and the thoughtfulness of his conclusions. *Why Employees Don't Do What They're Supposed to Do* demonstrates most happily that serious books need not be dull to be deep. The author's 15-year study of over 20,000 managers explores the "direct cause-effect relationship between a manager's actions and an employee's performance." The book has the profound simplicity of truth; as often as not, the reader's reaction to its conclusions is "but of course!" Fournies' advice is so commonsensical that it almost seems absurd that employees ever perform poorly at all.

One common problem, according to Fournies, is that many employees simply don't know what is expected of them. He describes a job as a "behavior rental agreement." The job description, he suggests, should define "the behavior for which you pay the rent money." Fournies recommends not only assigning priorities to various specific tasks, but also providing "a list of priority categories so [employees] can prioritize the work when they receive it."

Employees need feedback that is both specific and timely. "Telling employees this month their performance was good or bad on the first Tuesday of last month has no effect on that performance." And improving bad or maintaining good performance is, after all, the whole point of this book.

In the chapter, "They Are Punished for Doing What They Are Supposed To Do," Fournies uses the example of companies that do not allow employees to accumulate paid sick days; if they don't use them, they lose them. As another example, some companies pay "sales bonuses based on the percentage of sales improvement or growth over the previous year." This, he claims, encourages salespeople to plan a bad year to be followed up with a good one.

Fournies believes that most poor performance can be attributed to poor management, and he provides a list of specific interventions for managers to apply both before and after tasks are assigned. He sums up his rather backward approach to getting employees to do what is expected of them by saying, "if you eliminate all the reasons why people don't do what they are supposed to do, you are left with appropriate performance."

SPECTACULAR COMPUTER CRIMES
By Buck BloomBecker
Dow Jones-Irwin
(Homewood, Ill.), 1990
242 pages, $22.95



With the burgeoning popularity of "true-life" television crime programming, Buck BloomBecker ought to consider spinning off his new book, *Spectacular Computer Crimes,* into a weekly series on the Fox network.

BloomBecker definitely knows his stuff. After a decade at the helm of the National Center for Computer Crime Data, a clearinghouse that has been tracking the evolution of an increasingly costly and threatening problem, BloomBecker has plenty of yarns to spin. And although he is a fine writer and storyteller, BloomBecker has bigger fish to fry than simply to be entertaining: He is out to revise "the myth of computer crime," which he suggests casts the criminal in the glamour role of "the new Prometheus," avenging our subjugation to complex and inscrutable technologies. This myth, argues BloomBecker, serves society badly both as an explanation of and as protection against computer crime.

BloomBecker nudges the myth toward reality by declaring the overwhelming bulk of computer crimes to be as grubby, base and unworthy of respect as any other sorts of crime. Where computer crime is different, however, is in the persistent lack of clarity as to what constitutes property rights in the use of computer systems and information. As BloomBecker observes of one miscreant he chronicles: The man, who would never think of stealing a typewriter, has trouble accepting the wrongfulness of stealing mainframe time from a data-processing bureau. ("The computer is just sitting there anyway.")

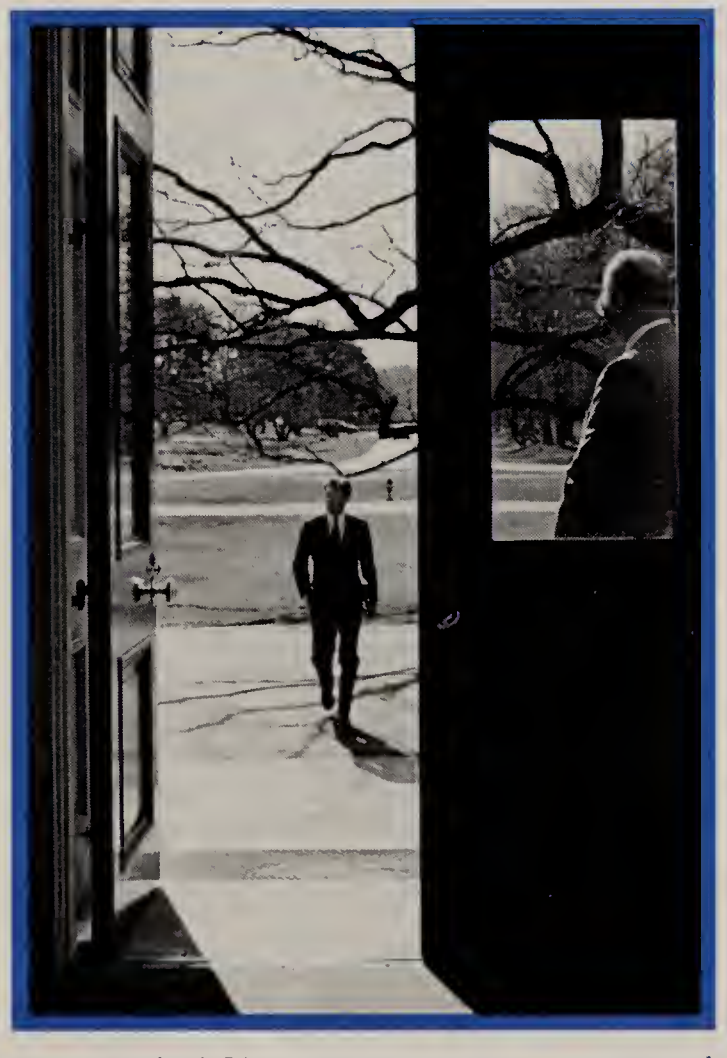
BloomBecker posits eight "criminogenic computer environments," which differ not in the nature of the systems they contain but in the way they are regarded by the criminal and in the motivations they suggest for the crime. These environments (with names like "playpen" and "cookie jar") correspond to acts that range from the merely infantile to the conventionally greedy to the terroristic.

BloomBecker later relates stories of crimes representing each of the eight domains, and the stories are buttressed with occasionally preachy but more often illuminating moral lessons. The book also tries to answer the question, "What is to be done?" The answer appears to be, "take responsibility."

BloomBecker, who finally admits that technology "scares" him, urges an informed citizenry to take an interest in computers and overcome the passivity and intimidation that technology can induce. Slowly, he says, a "computer ethics" will form out of broad debate and education. We will reach the point where the technical and human requirements of secure computing merge. And no one will make the mistake of believing that the property rights that apply to systems and information are any less stringent than those applying to typewriters.

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Image Tech: Solutions for the '90s

Wang Institute of Boston University, Tyngsboro, Mass.
June 18-20
Wang Institute of Boston University
508 649-9731

Topics discussed at this conference include planning and implementing document conversions, imaging trends and issues, evaluating optical imaging systems, legality of optical storage, and effective imaging project management. There is also an exhibit featuring product presentations. Registration fee: $895.

IBM and DEC Users Computer Security Conference

Buena Vista Palace, Orlando, Fla.
June 18-20
Computer Security Institute
508 393-2600

This conference is specifically designed to address the security concerns of IBM and DEC users. Topics discussed include communications security, network security, developing security policies, and disaster-recovery planning. Registration fee: $895.

PC EXPO

Javits Convention Center, New York
June 19-21
PC Expo
201 569-8542

This conference and exhibit features product demonstrations, tutorials and seminars. Topics include telecommunications and LANS, PCs and workstations in the '90s, operating-system platforms, and managing portable applications. Registration fees: $25 & $50 for exhibits; $125-$300 for seminars and tutorials.

Information Center Conference & Exposition

Marriott & Moscone Center, San Francisco
July 8-12
Weingarten Publications Inc.
617 542-0146

This conference, designed for information center managers, covers topics such as management, service and support, technology update and training and networking. Specific technologies such as LANs, CASE tools, OS/2, and desktop publishing are also covered. Registration fees: $275-$305 for one day; $915 for full conference.

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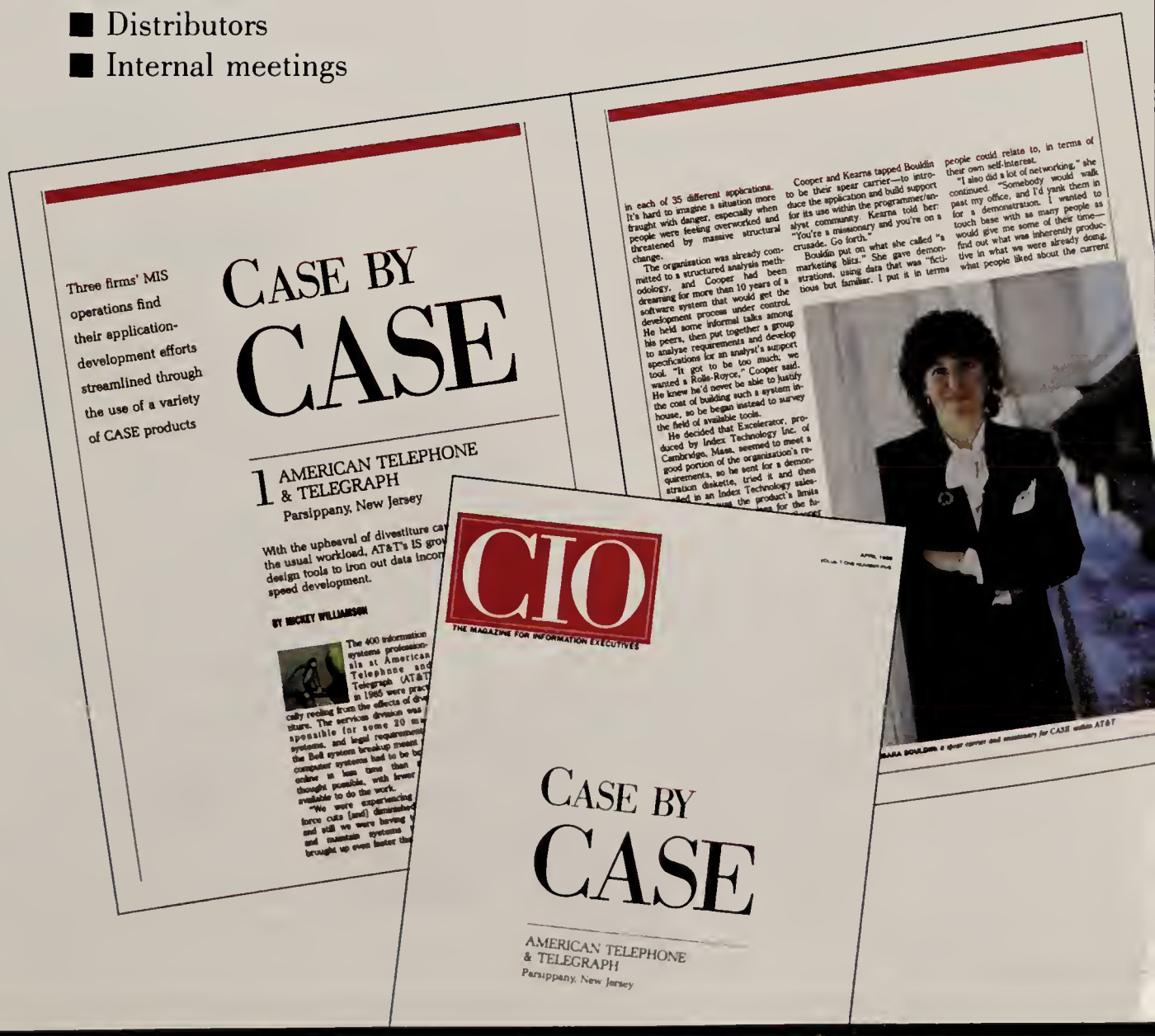
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CONFERENCE CALL

QUESTION: *What is the role of the CIO in a CIM effort?*

Reaping the benefits of computer-integrated manufacturing requires an intimate understanding of the manufacturing process and the factory floor. However, CIM projects are often linked to financial, purchasing or marketing departments, and thus require attention to the business as a whole. Is it possible for the CIO to be both a hands-on implementer and a global visionary?

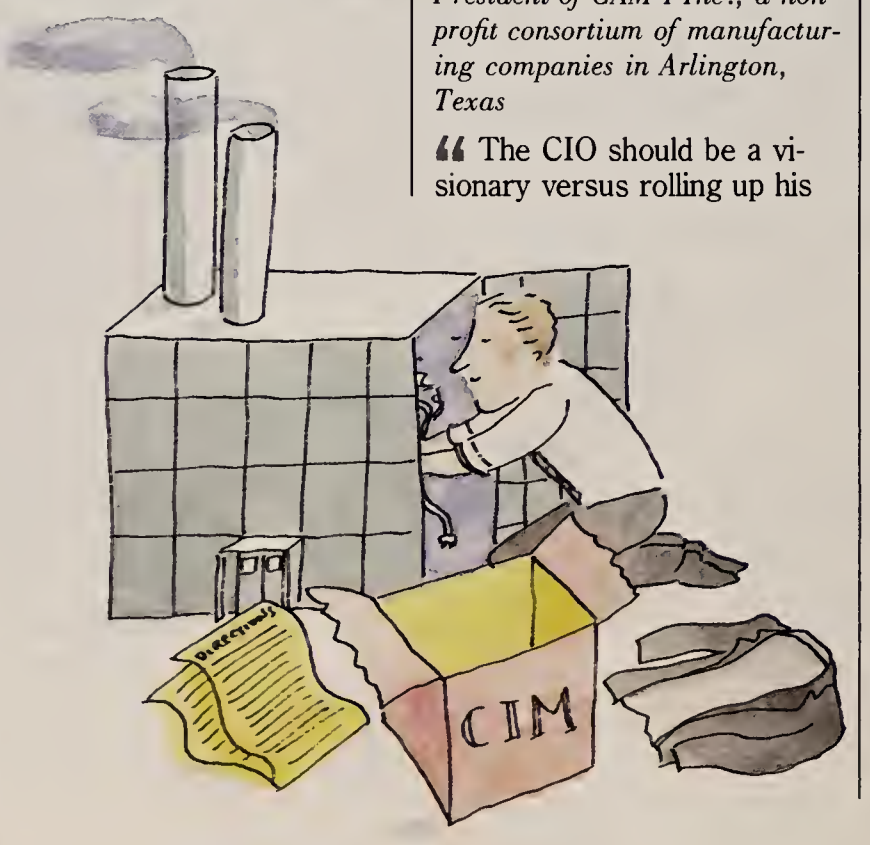
Larry Yost

Operations vice president of the Industrial Controls Group at Allen-Bradley in Milwaukee, Wis.

"If the CIO tried to be the visionary, he probably would be pushing with a string. It's more accurate to say he should be a proactive disciple of the technology.

"I think the CIO has an obligation to understand what can be done in the enterprise to improve competitive advantage. To do that, the CIO needs to understand what the real business issues are. The issue isn't just the shop floor. There is a lot of work going on on the shop floor, but if you look at the complete transaction—from customer to supplier to customer—there are many opportunities to improve the quality of the transaction; to significantly reduce time and cost.

"Many businesses are at the point where it takes longer to get the order from the customer and into the factory than it does for the factory to manufacture, test and ship the product. There's just a lot of people involvement in most processes. Even though systems are computerized, you've got paper coming out and being analyzed, reviewed, edited, changed and re-input. All these transactions add time and cost to the order cycle. A CIO should look for opportunities to reduce these things."



Ben E. Kaminski

President of CAM-I Inc., a nonprofit consortium of manufacturing companies in Arlington, Texas

"The CIO should be a visionary versus rolling up his sleeves and actually planning out the nitty-gritty detail. We're trying to make a distinction between a CIO and MIS. It's quite clear from our members' point of view that a person called the CIO is of strategic significance to a company. With that thought in mind, that person ought to set direction, vision and policy, but by no means be the implementer of IT. The CIO may be a project manager, but you need user involvement because the users are going to be saddled with the solution that comes up. And if you keep in mind the current trend to reduce organizational structures and put more responsibility with the people, it doesn't seem consistent to create a new CIM czar.

"Too many people see CIM as factory automation. The real problem we're discussing from a strategic level is the total realm of systems. You're really talking about all of the systems—not just information systems or automation systems, but all systems, whether human-driven, computerized or automated. All systems need to be integrated to successfully integrate CIM. You need to have someone who understands that whole thing. Anyone who just gets excited about the technology falls into the old trap where you try to implement it and you get disappointed. The CIO has to be above all that. He shouldn't get excited about anything."



Charles Fitts

Manager of Corporate MIS at Volvo GM Heavy Truck Corp. in Greensboro, N.C.

"In our environment it's absolutely necessary that those systems be developed on a global, corporatewide basis. That is the key to the CIO role. Computer-integrated manufacturing is simply manufacturing which is supported by a set of integrated systems that give the manufacturing people on the floor, and the people in planning and materials, the information they need to build our product correctly and efficiently. We don't think that CIM systems are very much different from other types of systems.

"The people who are really defining the system are the people running manufacturing. They're the guys working with us to define what these systems are going to do. The CIO has to work with all of manufacturing management to conceptualize and define system requirements, and then to implement those systems.

"One additional role of the CIO is to assure that all of the CIM architecture that's put in place is compatible with all of the other systems, in order to ensure that it's in line with the long-term direction of the company. None of these systems can exist in a vacuum. They link with practically everything: purchasing, finance, even marketing.

"Underlying this is the CIO role to coordinate all the companywide resources in the development effort. That usually involves bringing together personnel from a number of different plants and disciplines within the plants."

Readers are invited to suggest Conference Call questions. Contact Staff Writer Meghan O'Leary at 508 935-4733 or by fax at 508 872-0618.

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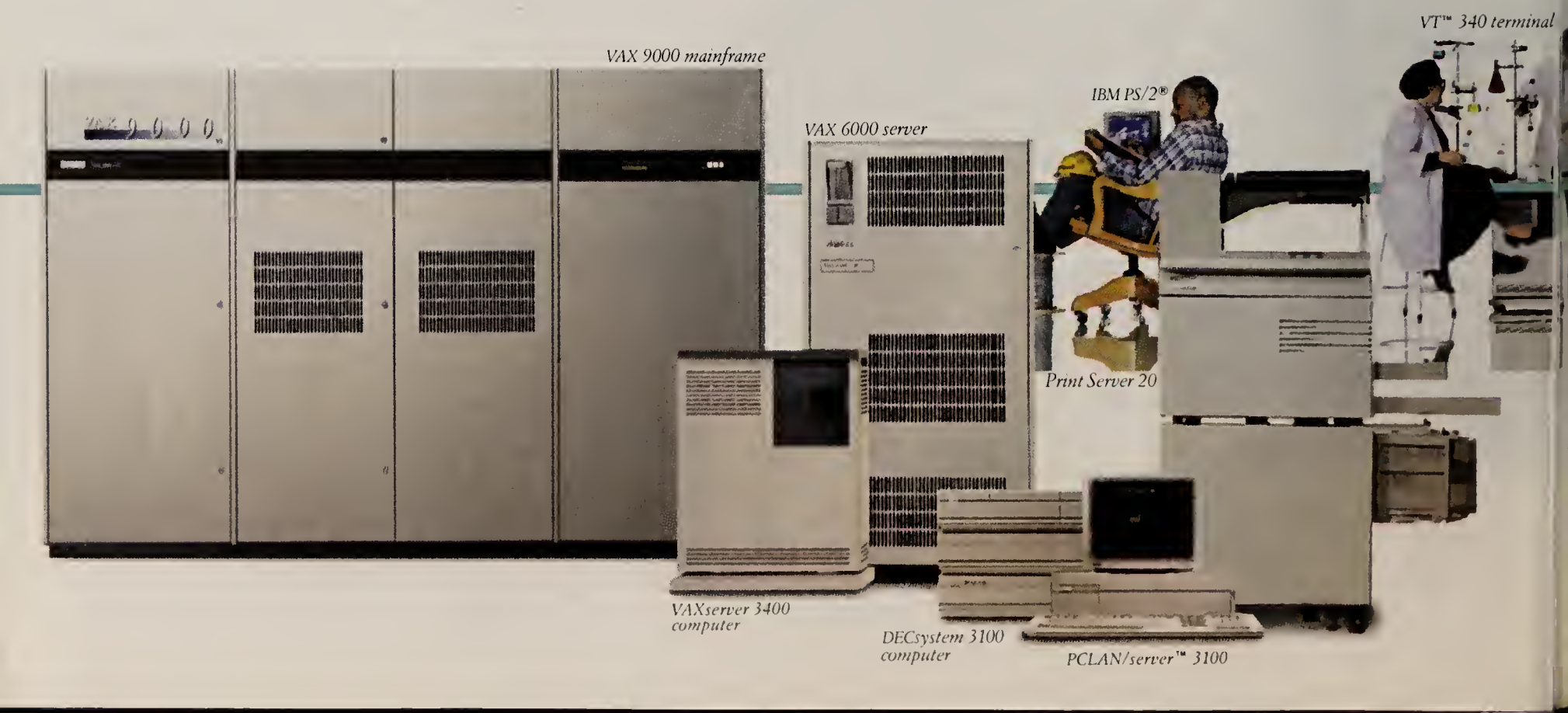
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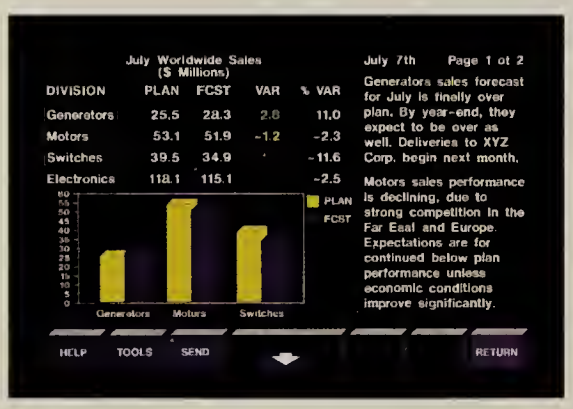


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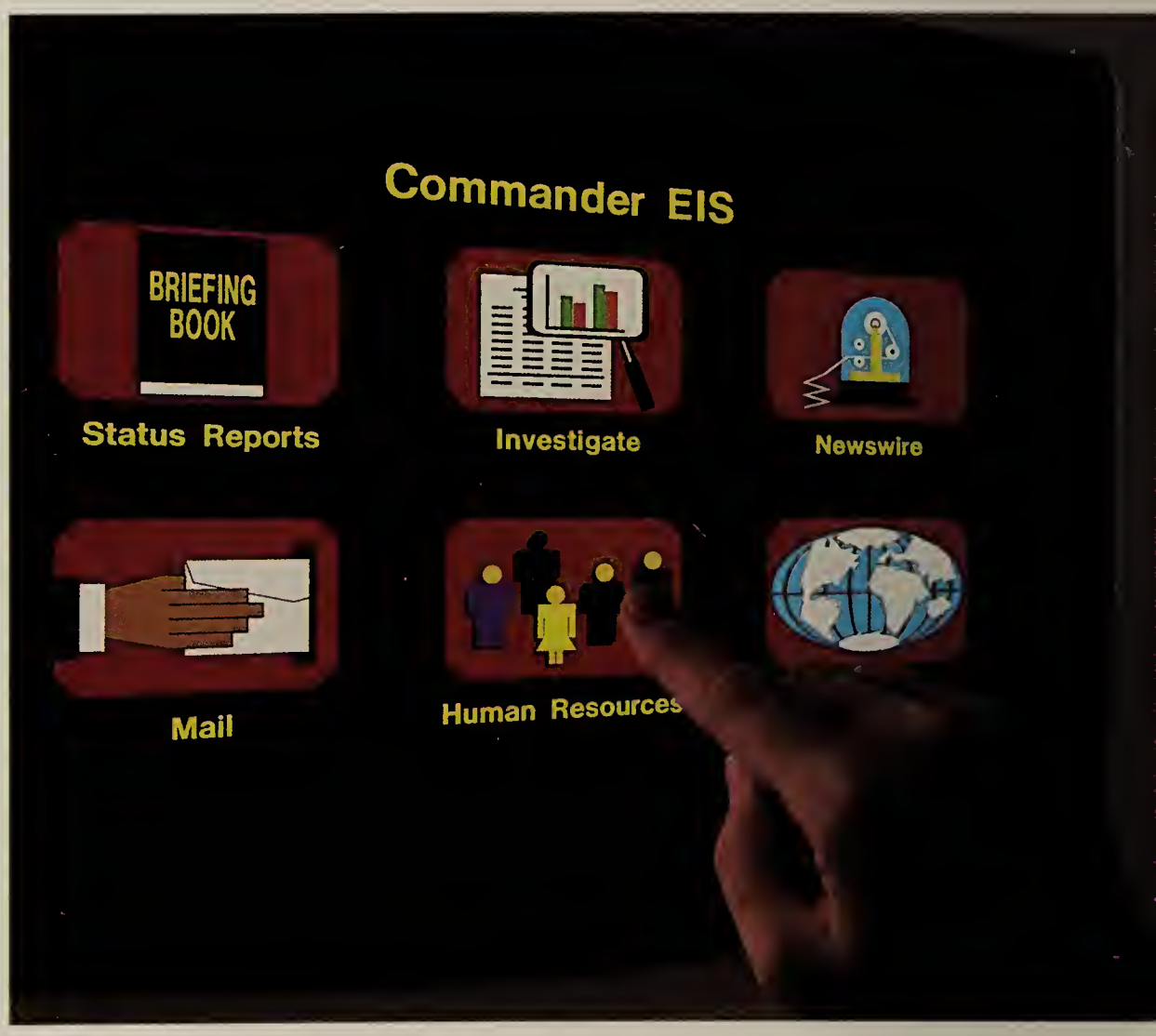
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July Worldwide Sales
($ Millions)
DIVISION PLAN FCST VAR % VAR
Generators 25.5 28.3 2.8 11.0
Motors 53.1 51.9 -1.2 -2.3
Switches 39.5 34.9 -11.6
Electronics 118.1 115.1 -2.5
PLAN
FCST
Generators
Motors
Switches
July 7th Page 1 of 2
Generators sales forecast for July is finally over plan. By year-end, they expect to be over as well. Deliveries to XYZ Corp. begin next month.
Motors sales performance is declining, due to strong competition in the Far East and Europe. Expectations are for continued below plan performance unless economic conditions improve significantly.
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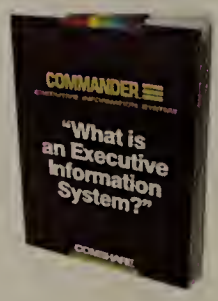
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